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COMPUTER WEEKLY

# Rising costs kill Chaps cheque clearing project

CHAPS, the Clearing House Automated Payments Scheme, has been killed more than 18 months after many of the smaller banks, that would have had to use the system collectively, expressed "extreme concern" about its cost and efficiency (CW, August 10, 1978).

Scrapping the project, just a few months before it was due to go live, has cost the 12 major UK banks that were funding the system more than £2 million.

In addition, they will have to compensate the main Chaps contractor, ICL, for the cost of supplying a lot of terminals to prospective users.

Chaps steering committee chairman Chris Gibbs said: "We are willing to talk to ICL if they are out of pocket."

Chaps would have been run on an ICL 2960 which had already been installed at the Bankers Automated Clearing Services centre at Edgware, Middlesex. This will now have to be returned to ICL.

Chaps would have handled "same day" transactions involving large payments between dozens of banks, a job traditionally done by messengers. Chaps would have complemented the existing BACS system at Edgware which handles high volume direct debit transactions.

According to Gibbs, the Chaps steering committee decided to carry on with the project 18 months ago despite the objections from potential users because additional costs were not anticipated such as the cost of data encryption hardware for terminals.

In addition, the whole concept of basing Chaps on a central system was now seen as rather outdated and any future system would probably involve a network linking user banks' computers.

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# Big boost on the way for IBM business market

MAJOR product announcements in business computers, the 4300 series and the 8100 communications processors are expected from IBM this year, with the launch of the H-series of top-end machines likely in the last quarter.

This was the consensus which came out of the C/IS-Yankee Group conference, The IBM Impact, in London (see Software File, page 7).

In the business computer area, a cheaper System 33 compatible with the System 34 is expected, and a System 36 is also planned.

There has been much debate whether this will be an upgrade for the System 34 or a small System 38. Given the problems with the System 38, the former is now believed to be more likely.

System 34 and System 38 are incompatible; the operating system of the 38 is new and is part of the fall-out from the Future Series Big Bang. Future Series, which should have taken over from the 370 in the late 1970s, was abandoned in 1974.

The RPG III on System 38 is a very high level language needing considerable recompilation of RPG II programs from System 3 and System 34. Further in the future a System 40 to provide an upgrade path for System 38 users is likely.

In the 4300 line, a machine above the 4341 and dubbed the 4151 is considered a certainty, as is a model between the 4331 and 4341. The latter machine could be offered as a field-upgrade for the 4331 and has been dubbed the 4336.

Commentators are certain that a 4321 or 4325 exists and that, if announced it would have an important role to play in IBM DP Division's attack on the office automation market, but IBM might decide to kill the product if it turns out not to fit in with marketing plans.

Another important product waiting in the wings is the electronic digital version of the 3750 telephone switching system.

Dubbed the 4750, this product could mark IBM's entry into the private telephone system market in the US — the 3750 and 1750 systems have never been announced there — and would plug a gap in its communications processor product line between the 3705 front-end processor and the traditional 3750 telephone system.

Price cuts on DP division's 3730 shared logic word processor are expected this year, coupled with an announcement of word processing under the DPCX operating system on the 8100 distributed processor.

Native mode DPPX word processing is also under development but is not likely to be announced this year.

## Computer quangos expected to go in government outs

ABOLITION of the Computer Board for the Universities and Research Councils and the transfer of its functions to the University Grants Committee now looks likely, following a recommendation to this effect in the government's report on quangos (CW, November 22 1979).

Studies are going ahead at the board to see which of its functions the UGC could handle, which the UGC could not cope with, which the universities could carry out themselves, and whether the change might lead to more administrative work. Some or all of the board's technical staff could be transferred to the UGC. Their job is to advise on the purchase and operation of university computers.

Other quangos being abolished following Sir Leo Pliatzky's study include the Police National Computer Policy Committee, which was set up to advise on the original design of the PNC system, and the Department of Industry's advisory board on electronic components and automation. The Computer Agency Council, which advised the Central Computer Agency, was wound up last summer.

The Council for Educational Technology is being retained, but its work is in be the subject of a "searching review". Public funding for the National Electronics Council is to be phased out.

## Byte Shop creditors likely to be paid following Comart takeover

FINANCIAL problems of The Byte Shop (1980) chain of computer stores was resolved last week when, as expected, it was taken over by microcomputer distributor Comort (CW January 10).

Some £385,000 of shares and loans is being put into the company by Comart. From the purchase, tha secured and preferential creditors of the Byte Shop should be paid in full, according to tha company's receivers, Stoy Hayward and Portners.

The receivers transferred the assets of the original Byte Shop to a new company, Summary 87, trading as The Byte Shop (1980) when it collapsed last year (CW, December 13, 1979). The new company has now been sold to Comart.

David Broad, managing director of Cromenco and Horizon distributor Comart, said that all six shops run by the company — in Ilford, London, Birmingham, Manchaster, Nottingham, and Glasgow — would be retained with all tha staff.

## Prize for Jaime

**JAIME GORMAN, the junior chess champion sponsored by Computer Weekly, was presented with £7.50 by the Evening Standard for coming third in the under-14 group in the National Junior Chess Tournament run by the newspaper (CW, January 10).**

**On the same day, Jaime also took part in a tournament at Highbury Grove School in Islington where he was one of 30 players competing against International Grand Master Larry Christiansen. Jaime put up a good fight but lost in his round with the Grand Master in a tournament which lasted seven hours.**

## NEWS IN BRIEF

### Maharishi in factories bid

MAHARISHI Mahesh Yogi's followers in the UK are asking the National Enterprise Board and other public and private sources of funding for money to take over or set up factories to combine manufacturing with transcendental meditation. They are hoping to make a bid for the recently closed Meccano factory in Liverpool, to combine new electronic products with some of its existing range.

Under the scheme, employees would work for six hours each day and practice meditation for the other two, on full pay. The effect of their meditating would "increase integrity and harmony in the collective consciousness of the whole nation," a spokesman for the Age of Enlightenment Company Ltd told CW.

There is already considerable expertise in electronics among the Maharishi's followers worldwide, the spokesman said.

### MD resigns

FOLLOWING the resignation of Sir Robert Clayton as chairman of fledgling semiconductor manufacturer GEC-Fairchild, the managing director, David Marriott has also resigned. He has also quit as a vice-president of Fairchild Semiconductor in the US. Murray McLachinn is acting as managing director.

### £7m order for GEC

THE Post Office has placed orders worth £7.9 million for 30-channel pulse code modulation equipment from GEC Telecommunications. GEC's orders now total over £14 million.

### Look into future

A SMALL exhibition now at the Design Centre, Haymarket, until March 8 aims to show the general public what offices will be like in the future. "Tomorrow's Office Today" includes one small business system, one screen word processor and the Microwriter hand-held WP.

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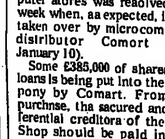

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## Briefing

### Inmos waits for £25 million

NO decision has yet been taken by Sir Keith Joseph on the second £25 million funding for the NEB semiconductor venture Inmos. Sir Keith is still awaiting the results of a study of the project being carried out by the Industry Department, but a DoI spokesman said there was no immediate sign of this being completed.

For Inmos it was said that the company was still within the timeframe for building the factory at Bristol (CW, January 13).

### Takeover date

SUBJECT to some formalities the Gamma Group will be taken over on February 11 by PRC International, the big US-based consultancy that opened talks with the financially troubled systems house about a month ago (CW, January 3). PRC is putting £500,000 into Gamma, a sum that will give it a 100% holding and pay Gamma's debts.

### Closure accepted

STAFF at ICL's Dukinfield factory have voted to accept the company's plans for closure of the site by the end of this year. The decision was taken at a mass meeting held this week after alternative proposals contained in a union report to ICL were rejected. About 800 staff will lose their jobs. A further 100 will be found work within ICL.

### US introduction

A NEW French-built Level 64/DPS model has been introduced in the US by Honeywell as tha DPS 330. It supersedes two models announced thera last year as tha DPS 320 and DPS 350.

### NCR moves

NCR is making preliminary moves into the office systems field with the recruitment of staff for a word processing development group at its microcomputer and communications centre in Columbia, South Carolina. What products will be made is not yet known, except that the company aims to meet requirements for office information processing as well as DP.

### Currys micros

CURRYS is still evaluating "eight or nine" microcomputer systems for its new computer retailing venture, says director Robert Webb (CW, November 15 1979). He denied that Currys had decided on two systems from Japan, the Sord and tha Panasonic, and said four of five systems would be sold by tha chain.

### WP training centre

A TRAINING centre for word processor operators has been established in London by Rosemary Pratt, under a grant from the Department of Industry. Pratt is also running courses for WP supervisors in association with ICFC Management Studies Centre.

# $175,000 price cut with AS/3-5 re-launch

TO remain competitive with the IBM 4341, National Advanced Systems has announced an enhanced and less expensive version of its AS/3-5.

In line with its policy of renaming the machines formerly sold by Itel, National has called the new processor the AS/3000. In addition, the AS/7031, National's alternative to the IBM 3031, is expected to be relaunched soon as the AS/5/6.

The AS/3000 has a new system console and a more compact design. The basic two megabyte machine costs $425,000 in the US compared with $600,000 previously tag put on the AS/3-5 when it was launched last year.

National has also formally announced the big IBM compatible processors built in Japan by Hitachi (CW, January 3). Designated the AS/7000 family by National, the three field upgradable machines are based on the Hitachi processor that was sold by Itel as the AS/6.

The AS/7000N offers more than twice the throughput of the IBM 3031 and comes up with up to eight megabytes of main memory and eight channels, while the AS/7000 counterpart to the IBM 3032 by about 25% and comes up with up to 16 megabytes and 16 channels.

# Print-out not admissible in criminal trials

A SERIOUS gap in the law has been exposed by the decision by three Appeal Court judges that computer print-out is not in itself admissible as evidence in criminal trials.

A great deal of interest and concern about the court decision has arisen among barristers and organisations concerned with accounting and security.

Barrister Alistair Kaiman, who takes a particular interest in computer matters, is to press the Law Commission to draw up amendments to the Criminal Evidence Act 1965 to deal with the problem. However, until this is done there will be "severe consequences" for many criminal actions, Kelman says, if they involve the increasing number of systems that generate records automatically, building security systems, voice analysis and so forth.

The Appeal Court hearing involved a prosecution for burglary in which bank notes found in the accused's possession had serial numbers allegedly part of a series that were in a stolen bundle. The numbers came from the Bank of England on a list produced by a note counting machine.

The problem was that the Criminal Evidence Act specified that the only admissible written records are those made by a human being of his own personal knowledge. In the case of the machine, the judges said, the operator could not be said to have had personal knowledge of every number the machine recorded automatically, and therefore the print-out was inadmissible. The conviction for burglary was quashed.

The judgment does not affect civil actions, as print-out is specifically allowed as evidence under the Civil Evidence Act 1968.

Lord Justice Bridge, in giving judgment, suggested that a gap in the criminal law had been found, but until it had been amended by Parliament, print-out produced automatically would be inadmissible.

## Spangle to be Memorex chief

**New chairman and chief executive of Memorex is to be Clancy Spangle, now president of Honeywell Information Systems and, since 1968, the guiding light of Honeywell's computer operations.**

**His successor as president of Honeywell computer operations is to be Steve Jerritts, formerly managing director of the UK subsidiary until 1978.**

**Spangle, who was involved in Honeywell's acquisition of GE's computer interests, and saw the company through a bad patch in the early and mid-1970s, takes over from Robert Wilson at Memorex. Wilson turned Memorex around after a disastrous entry into the mainframe business in the early 1970s.**

# More councils desert ICL

THE two latest local authorities to switch from ICL to Honeywell computers are Leeds City Council and the Manchester City Council, the latter being offered a DPS 8/52 system which is not yet marketed in this country.

Univac, IBM, ICL and Honeywell all competed for the Manchester City order but Univac and IBM left the running early. Univac because it was rejected and IBM because it is believed to have got cold feet and felt its chances of winning over a Labour-controlled council were small.

It has also been suggested that Honeywell was eliminated at an early stage in the proceedings but was later asked to re-tender.

In addition to the surprising offer of a DPS 8/52, Honeywell suggested that the council could go initially for a Level 66/DPS 52 and then move up later to a Level 66/DPS 300.

ICL on the other hand offered a dual 2972 configuration. One source estimated that this would have cost about £1.3 million more than either of the Honeywell systems.

The Leeds order is a major blow to ICL as it is the local authority which took part in the development of the Local Authority Management Information System, LAMIS.

Leeds has decided to replace its two ICL 1900s with an unspecified Honeywell Level 66/DPS system valued at about £1 million.

Last year Labour MPs protested in the Commons about the plans of another Manchester council, the Grenter Manchester Council, to buy an IBM system as a replacement for its ageing IBM 360/50.

Gerald Kaufman (Lab, Ardwick), former industry Minister, led the MPs in "deploring and opposing" tha decision largely because ICL has a big stake in the city and had at that time just announced its Dukinfield factory was to close with an expected loss of 800 jobs.

While the opposition had little effect on tha Greatar Manchaster Council's plans, a similar criticism has now been made of Manchester City Council since it has chosen a Honeywell system to replace an ICL Syatem 4.

An ICL spokesman declined to comment on any of the orders as he said the company had received no official rejection from the authorities involved.

## Bureau to spend £1.4m

CONFIDENCE that demand for both batch and online bureau services will continue in the long term has led the Data Sciences International bureau to order three ICL 2950/10 computers worth £1,300,000.

It will also invest £100,000 in the development of OPAS, a software package for order processing, accounting and stock control. The latter will be the first module and is due to be released in October.

## Surcharge 'unfair' say travel agents

TRAVEL agents equipped with the well established Datasaab ticketing and accounting minicomputer system, TAS, have joined with Datasaab in a complaint to the Office of Fair Trading about the activities of Travicom, the airline seat reservation service majority owned by British Airways. The service provides online access to the reservation systems of about 20 airlines.

The main complaint is about an extra £250 a month charged to Travicom users if they do not have a ticketing and accounting system supplied by Travicom. The Travicom system DPAS, is based on a Digital Equipment PDP-11 and is built and maintained by Computer Communications, which owns 15% of Travicom.

Datasaab was supplying TAS systems to travel agents well before the Travicom service was introduced and has 35 users.

Chairman of the TAS user group, Colin Bann of London-based Runnym Travel Services, told Computer Weekly that he believed the £250 extra charge to be completely unjustified because the use of a Datasaab system put an extra load on the Travicom system.

Brain called the Travicom charge "greedy" and said that his group would take its case to the European commission if the complaint to the Office of Fair Trading failed.

The only comment from

● Turn to back page

# NEB chiefs back Insac Products

THE National Enterprise Board has announced that its new directors have confirmed the board's continued backing for Insac Products, the NEB's overseas software marketing company.

Insac Products has had a shaky start since it was set up late last year, mainly because of the resignation of two members of its board, Len Taylor of Logica and Peter Adams of SPL.

Despite the NEB's statement, Logica said it was still not clear about the future role of Insac Products and that the appointment of a new Logica member for the Insac Products board was still not a certainty.

Insac Products is currently considering the possibility of allowing software companies in which the NEB has no share to become members of Insac.

They might be allotted some of Insac's £20 million funds for software development or promotion in return for a share of the profits generated by the product. But Insac Products could face the danger of a conflict of interests if a newcomer's product was similar to one

● Turn to back page

## INSIDE THIS WEEK'S CW...

**THE NEXOS PLAN**
Ian Muir Moffat, managing director of the Nexos office automation venture, achieves his aims the company will be one of the leaders in this potentially rich market. He talks to Tim Palmer about the future of the venture. Page 14.

**DPM AND THE MICRO**
How will the all-pervading micro affect the role of the data processing manager? In the first of two articles looking at this subject Nick Entiknap considers the opportunities this new tool offers. Page 20

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# COMPUTERVIEW

## Quangos in question

THE trouble with quangos is that they have the image, no doubt deserved in some cases, of providing jobs for the boys. Places on them are seen purely as perks for people the government or Civil Service wants to reward or keep sweet.

Universities have a similar image problem. Students, their teachers and their apparently idyllic life are paid for by the rest of us. This, with the generation gap, will always mean support for the "All those long-haired students, always fighting and marching: put 'em in the army, that'll soon stop 'em" brigade.

So when a quango related to universities is threatened with the axe in the government's attempt to save our money, there is unlikely to be a public outcry.

But the quango in question, the Computer Board for Universities and Research Councils, has done such a good job and made such an impact on an area far beyond its terms of reference that it is incredible that its future should even be put in question.

As it is the board's role is being looked at in terms of whether it could be split between the University Grants Committee and the universities themselves.

The formation of the Computer Board was one of the main recommendations of a working party on university computing led by Professor (now Sir) Brian Flowers in the mid-Sixties. The working party's report turned out to be a major landmark which pointed the way to university computing for the following 10 years and it was 12 years before its proposals needed to be updated in the light of improving communications facilities and the economic constraints of the Seventies (CW, January 13, 1977).

Before the Flowers report universities had bought their own computers with little regard of what other universities were doing. The Flowers committee recommended the setting up of powerful regional computing centres in London and Manchester — this has proved an extremely effective way of making huge, number-crunching power available to the most people at least cost — and the formation of the Computer Board to advise on and co-ordinate computer purchase by universities.

This, too, has proved successful. During the Seventies the board's budget, far from keeping up with inflation, has stayed pretty static at under £10 million a year. Last year the Conservative government's first Budget trimmed £600,000 from the money allocated to the board (CW, August 2, 1979). If the money for university computing had been shared between universities instead of going through a co-ordinating body, many university computer centres would long ago have closed and the others would be struggling along on ancient equipment. Instead the UK is looked on with envy by Europe and, some say, even by the US, because of its level of university computing here.

The board has brought universities together to plan. The universities have risen to this, burying their dreams of having every computing facility under the sun at their installations in favour of getting the best facilities for the region.

Through the Computer Board the universities have been able to act like a very influential user group. They have been able to negotiate discounts on bulk purchase: ICL recently made us the following offer of six 2960s at special rates with the offer to install the machines free of charge and the board could pay for them (CW, January 24, 1980). In return the board has co-ordinated work on ICL products by universities, some of which has resulted in new products.

If the board is killed all this will disappear. The University Grants Committee gives lump sums to the universities to spend as they wish. Such a funding system does little to encourage spending co-ordinated across university boundaries and encourages competition.

If the board's role is split between the UGC and the universities things will be no better. Although the board's secretary, Dr Henry Norton, who has earned the respect of the universities. Through him the universities can identify university computing as a definite cause to can rally round. Over the last 12 years, through the board, university computing has been a case for which we stand."

Divided, it fails.

# LETTERS to the EDITOR

## Benefits of EEC tendering policy

YOU state in Computerview (CW, December 13, 1979) that by criticising the government procurement policy Burroughs has joined the "Let's bash ICL" brigade.

As a £160 million company ICL has arrived, and it is quite capable of competing in open tender against the best that the rest of the world can offer. Indeed, ICL itself has said it would welcome open tendering for most government computer projects.

Clearly the main problem revolves around what constitutes a local company. We believe there is every justification for including within the classification a company which has been manufacturing in Britain since 1898, today has six plants in the country with a further two to start production during 1980, and employs over 3,000 people in manufacturing in the UK alone.

Moreover, the Computerview, while understandably supporting British industry, would appear to ignore the people who have to use the computer systems. You should, perhaps, add to the government support figure the cost to the taxpayer of the government computer installations which have overrun their budgat and still do not provide the services for which they were installed.

I firmly believe that a truly competitive tendering policy within the EEC guidelines would benefit both users and the UK computer industry as a whole. In particular, Britain has enormous potential in the EEC because of its strong manufacturing base built up in the country by multinational companies. To exclude them from a major part of the EEC market could only be detrimental to Britain's long-term interests.

Your comment also refers to the US government's procurement policy and seems to support the very case Burroughs is making when you state that "it is very difficult for a company to win US government business if it does not manufacture locally." Understandably so. Local manufacturing investment is the criterion, as it should be in the UK.

As to your point concerning US government funding of the R&D undertaken by US companies, we have no objection to similar funding of ICL. But this is an entirely separate issue from that of procurement. The decision as to which system can best satisfy a particular requirement should still be on an open tender basis irrespective of any research funding.

R. W. AKERS
Managing director
Burroughs Machines,
Hounslow

**THE EDITOR welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.**

## School problem

I WAS pleased to read both the letter of H. J. Skinner (CW, January 10) and your reply. Like Mr Skinner's school we are also short of working hardware and hardware examples suitable for demonstration. Our current problem is obtaining a Teletype in working order to produce hard copy output for our computer system. Any assistance in this area will be greatly appreciated.

With reference to the letter by C. I. Blackburn (Ibid) I believe that the response he received is indeed unfortunate, but understandable. Not all schools take an active interest in or indeed have staff able to teach computing, regrettable though this may be. For example, in Weston-Super-Mare there are four comprehensive schools and we are the only school which offers computer studies. This may well be the situation with regard to two of the schools which Mr Blackburn contacted, but a polite reply would not have been amiss.

Finally, I would like to add that whenever I have approached commercial and industrial firms for help with visits to their installations, I have always been well received and am appreciative of the goodwill extended by the members of the DP industry.

W. R. THOMPSON
I/c Computer Studies
Broadoak School,
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## *Who is going to buy it all?*

I HAVE plotted the figures on hardware price trends since 1962 given in Kit Grindley and Gordon Hall's article (CW, December 13, 1979) on semilog graph paper and find that the fall in the price curve has accelerated since 1973: the 11-year average for 1962 to 1973 is 11.5% a year; for 1973 to 1979 it is 19% a year. At this rate it is halving every 3.75 years.

It would be interesting to ask your pundits to forecast where and when it will in fact level out; no line of technical progress goes on for ever. It would also be interesting to ask how long the next 10-fold reduction in cost will take. It will surely be less than 17 years. IBM, we are told, is planning on a 10-fold increase in sales volume in five years to beat the squeeze.

What I would like to know is who is going to buy all this computing capacity. Not who needs it, but who is going to demand it?

CHRIS HUTTON SQUIRE
London EC1

** As Chris Hutton Squire says, no line of technical progress goes on for ever, and one would expect some levelling out in computer cost-performance over the next few years for machine based on current integrated circuits and packaging techniques. However, Josephson Junction-based machines are on the way, with a prototype expected by 1984. Particularly as the fast performance end of the market, it looks likely that the next 10-fold improvement will take less than 17 years – how about 10 years as a round figure? On the 10-fold increase in IBM's sales volume over five years – no comment. But people continue to demand ever more computing capacity, just for applications to cope with the latest software and related ideas from the computer manufacturers. And if the computer gets cheaper enough, demand could open up in education field, followed by home computing markets and Chris Hutton Squire may be demanding something more powerful than his micro by the end of the decade. – KIT GRINDLEY, GORDON HALL.*

## 1984 and all that . . . . .

THIS week's example of the strange things people say in the media about computers was sent in by M. Barnes, of Swanley, Kent, who wins £5.

**Can you put aside the frustrations of everyday life and throw yourself heartily into the holiday spirit, or do the problems still dog you, making time off just another marital tug-of-war?**

**Think of a computer; it has to be cleared of one problem before another is undertaken, otherwise parts of the old problem will be carried over to the new situation, resulting in confusion and inaccuracies.**

*Woman and Home*


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# SEMS leads race to launch mini based on Motorola bit-slice micro

STEALING a march on its US competitors, SEMS of France is almost certain to be first in the field with a general-purpose minicomputer based on the fast emitter-coupled logic MECL 10800 bit-slice microprocessor from Motorola.

The new machine, in the Mitra line, is code-named S2 and is due for launch in a few weeks. It is the first time that SEMS has adopted bit-slice micros for a processor, although AMD 2901s are used as controllers in existing models in the Mitra line.

Inherited from CII, the Mitra competes in many applications with SEMS' other mini line, the Solar 16. The latter is particularly strong in real time and industrial applications, and is the bigger seller outside France. In the UK, SEMS Ltd is only selling the Solar line.

SEMS is following Univac in using the Motorola bit-slice; the Univac 1100/60 mainframe and the DCP/40 communications processor are both built of multiple 10800 chips.

SEMS is currently manufacturing minis at the rate of 210 a month, and at the end of 1979 had 8,692 installed.

## Rival bids

A SMALL California-based manufacturer of chips, Maruman Integrated Circuits, of Sunnyvale is the subject of rival takeover bids from Atari, the TV games and personal computer manufacturer, and Toshiba. Maruman is seeking outside finance for expansion, and its provision could result in majority ownership of the company by one of the two bidders.

## Thomson regroups for computer thrust

THE French electrical and electronic group Thomson has declared its commitment to the computer industry by bringing together all its companies involved in the field under a new umbrella, Thomson-CSF Informatique.

Thomson-CSF Informatique owns 67% of the leading European minimaker SEMS, and wholly owns CIMSA, which makes military computer systems based on the Mitra mini; Citec, which manufactures disks for SEMS and also does sub-contract work for Pertec and Amdahl; and AEA, which makes power supplies. It also owns Cilond, a leasing company, and three software companies: Answare, concentrating on business applications; ECA Automation, which puts together complex computer systems; and TITN, which specialises in data network systems.

Three instrumentation companies, Cameca, Saphymo-Stel and Sodeme are also included. There is also a 37.5% holding in another software company, Sopra.

The remaining shareholders in SEMS are Télémécanique, originator of the SEMS Solar mini, with 24%, and the French industrial development agency IOI with 9%.

The minority shareholder in Thomson Informatique is Mines Kali-Ste Thérèse with 2%, left over from its involvement with CII before that company was divided between CII-Honeywell Bull and SEMS. It is a mining finance house.

The Thomson-CSF group had total sales in 1979 of $3,850 million, and the companies within Thomson Informatique accounted for $427 million of this. They employ 7,500 people, 600 more than in 1978.

## Bill to end PO monopoly likely

**LEGISLATION to separate Posts and Telecommunications and to end the monopoly of equipment supply would probably be passed in the next session of Parliament, Industry Secretary Sir Keith Joseph told the all-party Commons Select Committee on Trade and Industry last week.**

**Although the Post Office has already set up two separate management boards under the main board required by law to be responsible for its operations, it has no plans for moves on the equipment monopoly in advance of legislation.**

**A spokesman said the corporation was still having discussions with the Department of Industry.**

## Access to files

CUMBRIA County Council has installed two intelligent terminal systems based on Digico M18E processors to aid access to files held on an ICL 2900 mainframe belonging to a neighbouring council until Cumbria's ICL 1902S, which has no communications facilities, is replaced.

## Go-ahead for third phase of CSA text prooessing study

A THIRD phase of the Computing Services Association text processing study, leading to an analysis of findings for the benefit of the general public, has been given the go-ahead by the Department of Industry with additional funding of about £50,000. A detailed report on the use that commercial, industrial and governmental organisations are going to make of word processing and office systems over the next five years should be ready in about two months.

In Phase Two of the work (CW, March 1 and August 30, 1979) 10 different organisations were studied to find out how information flowed in their offices and how they could benefit from automation.

A "tremendous body of experience" has been accumulated from this work, according to the project manager, Colin Leeson of Langton Information Systems, and this should be of great interest to UK office systems manufacturers.

Preliminary study of the results indicates that firms may not proceed nearly as far towards the total integrated office system within the next five years as suppliers would like to believe.

## NDPS drops batch payroll

PAYROLL customers of the Post Office's National Data Processing Service have been told by NDPS that it will cease offering its batch payroll service from April 5. As an alternative NDPS is offering the 80 customers a Casu-Super C micro-computer on a lease basis, with a payroll package.

NDPS says that customers who do not want the SuperC are being helped to transfer their payroll work to another bureau running Unipay, the batch payroll system currently operated by NDPS.

Unipay was developed by Peterborough Data Processing of Peterborough.



# ICL back in US mainframe market

ICL is back in the US mainframe market. The group's US subsidiary, ICL Inc, has announced that it has been given the go-ahead to begin marketing the Distributed Array Processor, DAP, there. The DAP runs as a back-end processor to a 2800 or above running under VME/B.

Since ICL's policy on introduction of large 2900s in the US has been to try to secure strong prospects for three or four machines in one locality before taking an order, the company can be expected to put a strong push behind the 2900 there. It currently has two 2950s installed with former 2903 customers in the US, but is wary about committing itself to large system support until it can count on an adequate customer base to cost-justify the investment.

It is not the first time that ICL has tried to sell mainframes in the US: it sold a few 1900s there about 10 years ago.

The new System Ten model launched in the US as the System Ten 320 (CW, January 17), turns out to be the same processor that was launched in the UK as the System Ten 120, but offered with a different set of peripherals from the machine announced in the UK.

More memory is being offered in the US — a maximum of 200K-characters compared with 150K in the UK (CW, September 27, 1979). The processor, although fully compatible with the 200 model, which ICL is still marketing, is a new one implemented in TTL technology, with semiconductor main memory rather than core. The new System 85 VDU is being offered in the US as well as the UK, but the number of partitions un the US version is 20, compared with 10 on the System Ten 120.

# Zilog adds to commercial systems

THE Exxon-affiliated microcomputer and systems manufacturer Zilog is gearing up for a major push into the small commercial systems market. The company has just added two new hardware systems, and a multi-terminal Ansi Level 1 standard Cobol compiler.

The hardware systems are extensions to the company's range of MCZ-1 microcomputers, all of which are based on its Z80 microprocessor. Known as the MCZ-1/20A and MCZ-1/25A, they are respectively desk-top and rack-mounting versions of the same equipment. Their minimum configurations offer 84K-bytes of RAM, a terminal interface, printer interface and a floppy disc controller. Storage here can range from 800K-bytes up to 1.2 megabytes, while there is also a range of hard disc options which can add between 10M-bytea and 40M-bytes of store.

The Cobol joins Basic, Fortran IV, Pascal and the company's own system languages PLZ in the high level language roster. It has been designed to operate with five terminal options of the MCZ range.

## On the move

THE design and development facilities of Ferranti Cetec, the computer graphics equipment division of Ferranti, are to be moved to a new 30,000 square foot factory in Livingston, West Lothian, from Edinburgh.


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## Downtime

by Chad

# A match for ten ladies?

YOU may have seen Clive James' scathing attack on the brontosaurian antics of the European Parliament in Strasbourg, on Russell Harty's programme the other day. One thing the silver-tongued Antipodean did not scathe though was the activities of the middle-aged ladies he showed sitting around a revolving turntable, collating endless pages of bumph.

"Zounds!" I'm sure you cried as did I, "we know the French are backward but have they really not heard of collating machines? No wonder we are having to pay an extra billion pounds a year to finance these steam-driven bureaucrats."

I can report now, however, that the problem is not a simple one of ignorance. The ladies in question have a New Technology Agreement with the EEC.

Now you will be aware that the essence of these agreements is that nobody may be made redundant by new machinery (anything that is 30 years old is new in Strasbourg) but instead the output of the organisation must be expanded to absorb the extra productivity gained.

Since the machine can do the work of, say, ten ladies the Eurocrats are having to find a way of generating ten times as much bumph as at present before they can bring in the new equipment.

But don't worry, I am sure they will manage soon. Any people who can make the Common Market regulations on duck eggs stretch to 12,000 words should have no trouble.

# Half-baked results

MOST readers must be aware by now that IBM's announcements of low-cost mainframes over the last couple of years have had the same sort of effect on the residual values of leased IBM 370s as Attila the Hun had on house prices in Rome.

Which is why the attention of one of my colleagues was attracted to a story in the Wall Street Journal headlined "DPF Operating Profit Decreased Almost 75%."

DPF is one of the better known US third party computer lessors, and my colleague fully expected to read a tale of woe about the trials and tribulations of the leasing business.

Not so. On reading the story he discovered to his surprise that DPF is also in the baked goods business and, according to a quote from a DPF vice-president, the big drop in operating profits was caused by a fast rise in the prices of baking ingredients and skyrocketing fuel costs.

At this stage I could make some old quip like "That's the way the cookie crumbles."

But I won't.

## Murphy's law

COMMENT from the general secretary of the United Kingdom Association of Professional Engineers on the recently published Finniston report:

"Not surprisingly the hot potato of trade union representation for engineers has been smartly dropped and brushed under the carpet."

Well, all you have to do is wait for a few people to walk in and out and you'll have plenty of mash fur lunch!

- **"Secretaries won't be put out of work by silicon chips," we keep hearing these days. "The boss will always need someone to make the tea." This puzzles me. Can someone please explain why it seems beyond the capability of all this wonderful modern technology to devise a machine that can make a drinkable cup of tea? I am sure in Japan they will soon have robots dressed in kimonos that will carry in the trays for the Tea Ceremony and bow as they serve you. But the tea itself will still taste like washing-up water.**

## GILB'S MYTHODOLOGY

# Storing and spreading know-how

Tom Gilb is an independant consultant, engineer and author on computing topics.

ONE component of the Design by Objectives method, which I have mentioned in earlier columns, is the source of the design ideas for giving a system the attributes desired. I call this source of ideas a Technique/Attribute Table — T/A table.

The basic idea is simple and well known in other technical disciplines. A group of similarly intentioned techniques, for example all known program maintenance techniques, are listed on one or more pages. In addition to the name of the technique, some data is given about the range of values that can be expected for various interesting qualities of the technique, and the costs of using the technique. References to further detailed specifications should also be given.

Most of us have seen such tables for chemistry, physics, medicine, pharmacy, mechanical engineering, electrical and electronic engineering, building technology and almost any well organised discipline.

The only discipline where I have had some difficulty finding anything resembling technique/attribute tables is within the software engineering area. I hasten to remind the reader that I include dataware as well as all "logicware" in my own definition of software.

We have a great many publications and writings, and some of these writings even stretch themselves as far as comparing their pet idea in suitably vague state-of-the-art terminology ("better maintenance") with a limited and selected number of easily dismissed obsolete methods. We even have some publications which compare products on a functional basis.

One of the reasons for this situation is simply that we have not yet developed the habit of measuring the attributes (or most of them) of technologies. As a simple example, everybody talks about the improved maintainability of the various types of "structured programming", but have you ever seen a number indicating that anybody has ever actually measured any of their assertions?

A few examples do exist but they are few and at least 95% of the people who should be informed about the expected results are not so informed.

Let me be even more specific about the attributes we should document for our software technologies. The exact list for any set of techniques depends on the nature of those techniques. But this list will give you some idea of what I am recommending.

We should include attributes such as effect on maintenance time, effect on maintenance accuracy, reliability, probability of detecting errors, probability of correcting errors, degree of portability to various other software/hardware environments, availability and ease of human learning to use.

Also, we should add expected productivity in use, effect on development cost of system in which used, degree of demand on hardware resources, degree of conflict or interference with other techniques with which it might be used.

The objective of such tables is not necessarily to give exact knowledge. This is not only difficult to do because of our primitive measuring technology: but also because each technique must necessarily interact with many other techniques in a complex system of people, machines and software.

As Gordon Glegg aptly warns us in The Science of Design (Cambridge, 1973), "We never like to be far from some engineer's handbook and very useful they are too. And very dangerous."

The objective is to improve our ability to identify technological solutions which might be promising for our purposes. And, at the same time, the objective is to warn us of potentially harmful side-effects of that technology.

Glegg is careful, in his short and readable booklet, to warn us not to believe blindly everything in such books and in particular not to assume that what works for many applications of a technique is going to be true in your particular situation.

You must validate the technique in various ways (models, trials, experience) before you can know how useful it will be.

What are we losing now as we do not have a tradition of collecting technical knowledge about software in Technique/Attribute Table format? We have, up to now, lost a vast way of training system designers (system engineers or system architects) for the vital parts of our systems. They are forced to learn a few of the existing techniques during initial studies, although they will never be given the simple attribute specification for them.

They will, by years of experience, get a feel for the attributes of the techniques but they will provide us with unpleasant failures while they learn about all the attributes.

Finally it will be very difficult for designers to update their know-how base, except in a same primitive manner

## FOCUS

# Get fit for the power game

BY now the DP industry should have got the 1980s message. Commentators, pundits and industry leaders are all agreed that the going will be rough and tough.

Only the fittest will survive and only then those with high level skills in data and word processing, micrographics, telecommunications and related areas of information systems.

Not only has DP management to grapple with the new technologies; it is also having to do battle with company colleagues. Only as a result of certain combat will it be established who will direct the merging of company and office information technologies.

Just about the only non-competitive starters in the corporate race for power would seem to be the tea lady and company car park attendant."

It is becoming essential for DP managers to keep not only on their mettle, but on their toes. Of the two requirements, toe keeping would seem the more vital.

According to the latest issue of the newsletter British Manager, fitness, both mental and physical, is a critical attribute for management. Attention to fitness is guaranteed to boost the efficiency and performance of the individual.

But achieving a fit mind would seem more difficult than acquiring a fit body — particularly for the average DPM.

Where energy and fitness are involved, probably the DP manager has few equals. Rarely is he allowed any time to relax. Before he has time to settle down with his morning coffee and latest copy of Computer Weekly, he is summoned urgently to the operation room. Yet another tape drive has gone down; the engineer's phone seems but of action and the air conditioning has gone on the blink.

On the way to the crisis, the DPM is waylaid by the systems manager. Users are growing restless about the VDU response time and workloads are expanding fast. The DPM promises a full-scale meeting with all parties.

Sidestepping this problem, the DPM runs into the next hurdle, a mound of stationery randomly dumped in the corridor. It seems there has been a mix-up and three months' supplies have arrived in one delivery.

Pausing only to clear a pathway, the DPM finally makes it to the machine room only to discover he is urgently required back in his office.

In the United States, DP teams are encouraged to participate in lunch-hour jogging sessions. In the UK, however, the average DP team would be so exhausted, after having dealt with a normal morning's workload, that even a foray to the local inn would prove too strenuous.

It is hardly surprising that the DP profession is noted for such placid hobbies as kite flying or eagle watching on Hampstead Heath.

The same article features the benefits of such tension-reducing manoeuvres as self-hypnotic relaxation, transcendental meditation and yoga.

Most DP teams are already hypnotised by the amount of work to be got through by the end of the day.

Further advice in the article is to sit or lie comfortably, let your eyes close, but imagine that you are looking at a static spot two feet in front of your forehead. For most operatives, that spot could turn out to be a far from placid user manager. Tension would become intensified.

There is, however, no doubt that only a fit executive would be able to deal effectively with problem areas could well be mandatory.

Future On-Line courses could involve the touch-line and gateaux would be expected to attend in track-suits.

Winning a CW Computer event could carry more glory than winning the IDPM Installation Award.

### 10 years ago

**From Computer Weekly of January 29, 1970 . . .**

**A JOINTLY-owned computer services company was established by ICL and Barclays Bank following an agreement announced by ICL chairman Sir John Wall at his company's annual meeting. Called Bario, it was expected to be in full operation by June. . . . A tender under consideration by the European Space Research Organisation to provide computing and communications facilities at three ESRO establishments was seen as a key that could unlock the door to genuine cooperation between European firms. . . . The University Grants Committee recommended in its 1968/69 report that all undergraduates should receive computer training.**


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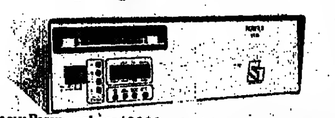

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# First shots in micro price war

THE skirmishing in the microcomputer market between Microsense, UK master distributor of the Apple II computer, and ITT Consumer Division with its Apple-licensed 2020, could soon end up as a full-scale price war. This is not a time when ITT is gearing up for a major push into the marketplace.

The beginning of February sees Microsense dropping the price of a 16K-byte black and white Apple to a suggested retail price of £695. ITT, according to marketing manager Graham Pybus, is still considering its response.

Pybus said last week, "We can't understand their motives in cutting prices. It seems to be to nobody's advantage to cut operating margins."

The Microsense price drop coincides with a corporate decision by ITT to make a significant impact in the microcomputer market. "We have been testing the market till now," Pybus said, "but from now on we are going to be much more aggressive."

This aggression will come in two forms. Firstly, there is now a commitment to increase the production rate of the 2020, a Keele-built Apple II. ITT can, according to Pybus, readily double the production rate for the system, but he said the rate would increase to match the market growth. This will be backed by the introduction of a 250K-byte double-sided, single density mini-floppy disc drive, due in six weeks. Later, a half-megabyte drive will be launched, though it is undecided yet whether it should be a dual density mini-floppy or single density 8-inch unit.

The second area of ITT activity is software. The company is spending about £500,000 over the next 18 months with the aim of producing 16 new business applications programs. Working in collaboration with BOC Microcentre Developments, and liaising closely with Apple in the US, ITT has been obliged to invest this money because of the incompatibility and unsuitability of much of the Apple software packages for both the UK market and the 2020.

The first packages to be released, a set of general business ledgers, should be available from March.

According to a Microsense statement on the price reductions, Andre Sousan, president of Apple International Operations, said, "The price reduction results from the level of cost effectiveness that our sales volume in the UK has allowed us to reach."

This looks like an attempt to follow the classic semiconductor components price-learning curve. Its applicability to systems selling is as yet unchanged.

## ITV plug for Prestel

**PRESTEL's big boost is to start on March 24 with a two minute advertising slot in ITV's News at Ten every night for a week. This will coincide with a big push at Viewdata 80 at the Wembley Conference Centre with a film, lectures and demonstrations of the Prestel service.**

**Expenditure on promotion is planned to total £1 million for March and April alone.**

# Honeywell prices up in US

FOLLOWING the trend set by IBM with its New Year price increases, Honeywell has announced sweeping increases in the US. These cover the new DPS/8 line announced last autumn but not scheduled for delivery until later this year. In the UK a Honeywell spokesman said there were at present no plans to announce increases.

The DPS 8/20, 8/44 and 8/52 have purchase prices increased 15%, but the top-end DPS 8/70, the only model announced in the UK, is unaffected. However, add-on memory for all models is raised, by 15% on the two smaller models and 25% on the two larger models. Maintenance charges are up between 5% and 20%.

Series 60 rental prices are up 7% and peripheral rental prices and software licences are up by as much as 20% on some items.

Level 6 minicomputer prices are up 5%, and software licences for DPS 8 and Level 6 are up 10%.

Storage Technology has also announced across the board price increases of between 5 and 15% for all its memory products in the US. Lowest increases are on tape drives and solid state storage.

Amdahl has upped its US prices, but only for leases. The move, seen as a measure to encourage users to buy their machines outright, involves two and four-year leases on all Amdahl models. The increases range from 6.5 to 8.3%. The licence for Amdahl's VM/Performance Enhancement software package is increased by 16.7%.

# Online law library needs £150,000 a year

MOTIVATION, education and innovation are the three tasks facing the National Law Library in its efforts to promote online retrieval of legal information, said the organisation's president, Lord Scarman, a Lord of Appeal in Ordinary at the library's official launch.

The library (CW, January 24) was appealing for funds which it is estimated will need to be about £150,000 a year. Also lending his support to the appeal was Lord Denning, Master of the Rolls.

Deciding what users need and persuading operators of online services to provide it will be a major task of the NLL, Lord Scarman said. Privately, however, some law publishers have responded that they already know what their customers need and that an extra charitable body is unnecessary.

The library's funds will be used to finance research, the development of a pilot database on tax law, and an educational tour of England and Wales to introduce the idea of online retrieval to solicitors. Establishing standards is of particular interest.

Lord Scarman suggested that online information on laws would be useful to other people in addition to lawyers, for instance Citizen's Advice Bureaux.

# Not to seek compensation

LOGICA has stated that it will not be seeking any compensation following the cancellation of the Clearing House Automated Payments Scheme, Chaps (CW, January 24). Logica and ICL were the two main contractors on the Chaps project and ICL wants compensation for the cost of installing terminals.

Logica's contribution to the project involved personnel only, and they were paid on a month by month basis. For this reason Logica is owed no money by the Chaps steering committee, the organisation representing the 12 big UK banks that were funding the project.

Logica says that the people working on Chaps have all been found new projects to work on.

# Nixdorf turnover up 23%

NIXDORF Computer, the West German small systems manufacturer, has announced that turnover rose 23% to DM 1,230 million in 1979. The figure is equivalent to £730 million, £226 million.

The company forecasts another 20% increase in turnover in 1980.

# Ferranti fire under control

FERRANTI was prime contractor on this fire service control room for the Greater Manchester Council — and soon after it was in full operation Ferranti itself suffered a fire on its Gem Mill site. Five fire engines were sent from four different stations.

The control system is based on a 128K-word Ferranti Argus 700C minicomputer and is claimed to be the first successful implementation of computer-based control in any fire service. Trials of computer-based systems in Surrey and Strathclyde in the early 70s were discontinued because they gave no advantage over previous methods.

Response time is quicker with this system only when the service is very busy. Under normal operations the benefits are more reliable location of any one of the city's 60,000 streets and more efficient deployment of resources.


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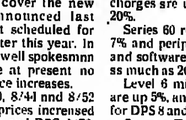

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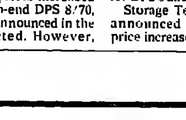

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CW7

**PAGE SIX** for programmers and analysts — by Judith Morris

# Does your physical appearance brand you as unemployable?

Geoff Busby with his manager, Chris Vickers, at work on GEC-Marconi's IBM 3277.

APPEARANCES can be deceptive, but as anyone who has ever been for an interview knows, they can also be very important. An interviewee has about half-an-hour to project his personality and ability, and when he has left the prospective employer is going to remember vividly something as trivial as a spot on the face or a slight provincial accent.

Imagine, then, being slumped in a wheelchair without the use of arms or legs, and with speech so badly impaired that the interviewer can hardly tell what you are saying. For a disabled person the battle to project potential through external appearances is not just nerve-racking; it is a nightmare.

A handicapped job-hunter has to make a tremendous impression on the employer to convince him that he is employable, let alone capable of doing the job in question. Unfortunately the situation usually results in the interviewer being just as nervous as the interviewee, if not more so.

Geoff Busby is the education officer of the BCS Specialist Group for the Disabled, of which he is founder chairman, and being severely disabled himself knows all about this kind of situation. At present a computer programmer with GEC-Marconi, he is well acquainted with the strain, embarrassment and heartache that people like himself suffer in their search for work.

The BCS Disabled Group was formed in March, 1975, and since then Geoff has been involved in helping the disabled find jobs and publicising their case among employers.

The subject is a sensitive one which many employers choose to ignore. If a disabled person wants to work, it seems a satisfactory remedy to most people that he should occupy his time by weaving baskets or with some other pastime traditionally associated with those who are incapable of doing an ordinary job.

This attitude suggests that someone who does not have the use of a limb is equal in terms of usefulness and mental capacity to a cabbage. Anyone who wants to use his or her full potential and play a useful role in society is hindered by an alarming amount of prejudices and fears.

Geoff Busby's own story illustrates exactly what a disabled person can do, given opportunity and determination.

Labelled from an early age as "unemployable", he took several steps to prove society wrong. During a stay at a Spastic Society centre in Buckinghamshire, Geoff saw a TV documentary about IT International, the systems consultancy already featured on this page which employs housewives and other people confined to the house, including the disabled.

He took an aptitude test which gave him the encouragement he needed. After transferring to Oakwood College, Geoff and several others took advantage of a scheme offered by Ford Motor Company which was looking for disabled people to train and use as computer programmers.

Six of the students became trained and started doing freelance work for Fords. As there was not much work to do, in 1971 only two of the original team were left, but a year later the computer bureau Scicon came forward to help the group and for the first time Geoff was actually making a living out of working as a computer programmer.

When Scicon moved to Milton Keynes, however, he once again found himself trying to persuade employers that he could be a useful full-time member of staff. He was unsuccessful until the formation of the BCS Disabled Group.

The BCS could not promise employment, but it could provide escorts for interviews, which helped Geoff at least to break through the initial stages of getting a job.

For the past four years he has been with GEC-Marconi where he is employed as a programmer, but does systems analysis work as well. Although happy in his job, he admits that "it isn't a challenge any more."

This is something which happens to disabled people. Finding a job doesn't mean their problems are over. Often they are just beginning.

"Employers are reluctant to employ disabled people at a high level," explained Geoff, "even if they are capable of doing the work. People are frightened of the attitudes of clients or even the reaction of colleagues."

So it is easy for an employer to take on a handicapped person and then conveniently forget about him — and that means forgetting that the person has just as much ambition and drive as, if not more than, a "normal" person.

But for the moment these are problems to be attacked in the future, and Geoff Busby and the BCS group have quite enough problems in cutting through the mass of red-tape which seems to prevent disabled people finding fulfilling careers.

Interview technique is only one of the obstacles the disabled person has to face, and if he has got that far he has already overcome many hurdles.

As chairman of the disabled committee Geoff found himself receiving three letters a week from people who had tried unsuccessfully to find work. Although he was involved with the BCS, he was not committed to finding people jobs in the computer industry.

So that people should be given the chance to find out if they were suited to that type of work or not, the BCS group ran an aptitude test. Then they tackled the problem of what to do with those who passed. Experience had shown that capability was not enough: there had to be training. A course seemed the ideal remedy, but again this was not the sort of thing which could be run on a voluntary basis.

Luckily the course qualified for a TOPS grant, which meant it was government-sponsored. The first of these courses started several weeks ago and will last for 18 months. ICL takes charge of the technical training but the specialist group still has close connections with it, including representation on the selection board and close monitoring of students' progress.

Will all the students find jobs after the course? Unlike the TOPS courses, which always enjoy good results, it is unlikely that more than one or two of the disabled TOPS students will actually be offered jobs.

Geoff Busby goes to great pains to explain the misconceptions which surround the employment of the disabled. "One of the myths I hate is 'it could never happen to me' attitude. It could and it does.

"During the first year of the group's existence, over 20 people wrote in wanting jobs as programmers. They were all people who suddenly found themselves in the position of being unable to support their wives and families. Most, if not all, had life insurance policies."

"But there is a distinct reluctance to recognise that one might become disabled, and the best way to insure yourself against this is to create a society which will offer you the opportunities to be as independent and individual as you are at present.

"The other myth is that there are people who can and people who can't cope with the disabled. Most of the 'normal' members of the BCS Disabled Group had never come into contact with the disabled before, but things like feeding, pushing wheelchairs and getting bodies in and out of cars has now become second nature."

What about special aids? Not all disabled people require aids, pointed out Geoff, and where equipment is necessary employers can call upon the Employment Service Agency for finance.

Geoff was involved with the design of an aid known as Mate, memory assisted terminal equipment. This was developed by a team of computer engineers from the University of Essex, and basically it is a light touch keyboard which will fit into any standard teletype 33 terminal.

The light touch facility makes operation a lot easier for the disabled person who has to use a stick held in the mouth or, like Geoff himself, his nose, to depress a key. Also the Shift and Control keys lock for one character when they are depressed and a light tells the user which mode he is in. The light will stay on until either another key is depressed or the Reset button is pushed. A word-store feature, made up of PROMs which each consist of 16 words, enables the user to print a word and send it to the computer.

The whole package can be produced for about £300 and so is within the reach of the disabled person.

No-one, of course, claims that a disabled person is any more intelligent or better suited to working in computing than anyone else, although Geoff Busby pointed out that if one is disabled, one is forced to discipline the mind to find the most efficient method of working — which is why many disabled people do make good programmers.

One of the most remarkable features of problems like this is that so-called "intelligent" people in responsible positions have to be educated by Geoff Busby and the work of the BCS before they can appreciate that a disabled person may not look or even sound "normal" but still has a brain like anyone else.

Geoff has become professional in putting people at their ease fairly quickly — after all, that's part of his job. He admits that in interview situations he often ends up answering questions that he knows people want to ask but are too embarrassed to do so. There are usually practical questions such as how does a disabled person get to work, how does he answer the telephone, and how much assistance does he need from colleagues to perform ordinary everyday tasks.

Understandably, employers are concerned about these matters as much as a person's ability to do a job. No-one likes employing someone whom they feel may disrupt office procedures.

In Geoff's own experience he has always had great support and help from colleagues. He usually gets a lift to work, but if this is inconvenient he takes a taxi.

Once in the office, he needs assistance in using the telephone, which has to be held to his ear, and also in writing down messages as Geoff cannot use a pen. He uses his nose to depress the keys on a terminal or typewriter.

Sympathy is difficult to define in this case and it is perhaps unfortunate that handicapped people have to rely on it so much for opportunity and encouragement.

With professional bodies like the BCS and the Management Services Commission taking an active part in encouraging the employment of the disabled, hopefully old-fashioned prejudising attitudes will disappear and the disabled will simply be regarded as freaks and accepted to occupy normal positions in society.

Geoff Busby admits that the ultimate goal is to make society for the disabled unnecessary.

At the moment, of course, this is a dream. The BCS is soon to carry out a national survey to ascertain employer attitudes towards employing the disabled in computing, and to match people looking for jobs with sympathetic employers. Geoff has also got plans for a Mote Mark II, which is a memory assisted typing assistant.

Certainly the disabled person looking for employment is more likely to find it if he is looking for a firm that is more receptive to change. "Don't look at what we can't do," says Geoff Busby, "look at what we can do. And then look at yourself. Could you do it if you had my disability?

"People push to the back of their minds the notion that it could happen to them. But what would they do?"

**Geoff Busby is perhaps unusual in holding a job as programmer/analyst in spite of severe disabilities. As education officer of the BCS Specialist Group for the Disabled he also helps handicapped people to find jobs, and his goal is to make the BCS group unnecessary by changing employers' attitudes towards employing the disabled in computing.**


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## Puzzler

$A^2 + B^2 = X^2$

$A^2 + C^2 = Y^2$

$B^2 + C^2 = Z^2$

**A+B+C=401**

THE task here is to identify the three numbers A, B and C. (The 401 total is the smallest possible for this set of interlocking equations, where all six letters represent different integers.)

See page 53 for solution.



**SOFTWARE FILE** — by Claire Gooding

# Fortran 77 picked for 10 mbyte mini

AT a time when Fortran is undergoing a major rethink and a potential change of image, one UK company is backing it as the language to be used in its new mini system, the Tri-Novum.

Computer Application Research plans to break into the mini market in a big way in the coming year, selling 10 megabyte configurations and upwards for a starting price of £10,000. The firm describes the Tri-Novum as "a triple processor mini with mainframe software at micro prices".

Although Cobol and Basic are available on the Tri-Novum, the firm chose the fOS Fortran 77 operating system with an eye to adapting it to commercial and administrative purposes as well as its better-known functions.

fOS Fortran 77 complies with Asci standards, incorporating the Algol-like enhancements which attempted to make Fortran more flexible. It was recently chosen by the US Navy for its strength in the areas of communications, security and adaptability.

The system was developed by Izhar Shy, a keen observer of Fortran's evolution, who has gone ahead with development of an advanced compiler and system which takes every advantage of the most recent Fortran standards as well as incorporating his own designs.

Shy has put a lot of effort into improving the file handling and I/O facilities in the belief that improved file-handling will give Fortran a future in the commercial market.

Several packages dealing with more familiar applications of Fortran such as financial planning are already available on the Tri-Novum.

The idea behind extending the facilities of the language to compete in other fields of data management is that companies investing in the system for a specific purpose will later find it easy to expand the software with the hardware.

Shy is eager to prove what it can do in business applications.

## Logica plans a Cobol interface for Rapport

LOGICA plans to introduce a Cobol interface this year that should greatly extend the line-up of potential customers for its compact and portable relational database system Rapport (Software File, October 11, 1979). At the moment Rapport is offered mainly to scientific and technical users who do not want to get enmeshed with a Codasyl type system.

It was developed by Logica in conjunction with the Royal Armement Research and Development Centre and is written in Fortran. A version written in the Coral real time language is under development.

The basic Rapport system costs £6,000 and occupies 10K-words on a f6-bit mini while the full Rapport system costs £12,000 and requires 25K-words. Its options include on interactive query language, back-up and recovery and a locking facility that prevents more than one user accessing the same file simultaneously.

## SaFeS users establish a 'friendly pressure group'

THE newly-founded users association formed as a "friendly pressure group" on Safe Computing and ICL has established a formal constitution. Membership of the association is restricted to users of the Small Factory Systems package (SaFeS) for production control, using the ICL System 10 range.

Members are being invited to look in depth at specific parts of the package and suggest modifications to suit their needs.

Apart from secretary David Kay there are no members of Safe Computing on the committee.

## Gino-F now on Nord minis

ANOTHER machine has been added to the wide range on which the Computer Aided Design Centre's product Gino is already available. The graphics package Gino-F is now available on the Norwegian Nord minicomputer made by Norsk Data.

The centre aims to make general purpose graphics facilities available on mini and microcomputers. Gino-2D, the two dimensional derivative of Gino-F, was recently launched on a Motorola 6800, the first time it has been available on a micro, and its price has been cut by 30%.

## Datamanager updated

RELEASE 2.1.2 of the data dictionary system Datamanager has been issued by MSP. It is designed to increase flexibility and DBMS support as well as allowing for secondary indexing, and is aimed at users of IMS, Adabas and Total. MSP has also made available a Com-plata interface for Datamanager in response to requests from users.

## Watching the subs

A SUBSCRIPTION/circulation package for small to medium-sized publishing houses has been developed by Computerplan of Hounslow, Middlesex. Based on Data General minis, the system handles all the specialised functions to do with the administration of publications and costs £16,000 as a turnkey system, or £3,750 for the software alone.

## Data entry system

AS well as the Data Entry RPG on the new IBM 5280 data entry terminal system (CW, January 17), there is an Anal 74 Level 1 Cobol subset which enables users to design display layouts and forms at the terminal to match those on the mainframe programs. The Cobol runs on the 5280, but has to be compiled on a 370, 303X or 4300 host.

## Database query language

A DATABASE access system and query language, Info, designed for use by non-computer personnel, is being marketed in the UK by Derbi Computer Systems of Watford.

Developed by US software house Henco of Boston, Mass, the system is available for use with Prime-based installations, but can be used for loading on most machines. In the UB Honeywell offers it as Info 1 for use on Level 6 minis.

Derbi is selling the Fortran-based system for £6,000 including training and support for the first year.

## CADC wins a Japanese foothold

**WHILE interest in the Oriental market increases, the Computer Aided Design Centre at Cambridge has already established a foothold in Japanese industry.**

**The centre has concluded an agreement with the Institute of Japanese Scientists and Engineers for the development of the program DPS. ICI is to help with the project, which is to do with simulation of unsteady state behaviour of chemical process plants, such as during start-up, shut-down and changed operating conditions.**

**The institute, which originally developed DPS, is to enhance the calculation facilities of the program, while the centre will be helping with its expertise on user-oriented output and input facilities.**

**Negotiations have been spread over the last three years, and the first stage of the project is planned for completion in November 1980.**

## Computer Associates prepares to enter China market

COMPUTER Associates is getting ready to market its line of IBM systems software products in China in anticipation of what it feels is bound to be a developing market in that part of the world.

In the short term the company does not expect great revenues from the appointment of EDPS Systems in Hong Kong as its distributors. At present CA estimates less than five or so IBM mainframes in China, but the move is geared towards future income from China.

Sam Goodner, president of Computer Associates International, said of the venture: "The computer market is just getting heated up in China and we feel that IBM will be getting its usual share as it has elsewhere around the world. We want to be ready when that day comes."

He added: "There are about 50 mainframes in Hong Kong alone, which is a sufficiently large market for our broad line of DOS and OS system software." The Bank of China has also recently installed two IBM 3032 mainframes, which Goodner sees as a significant hint of future trends.

## Audit system

A COMPUTER auditing system from Pansophic, complete with training and telephone support, is now available for IBM users in the UK. Panaudit incorporates over 50 programs, and creates complex reports, and allows audit campaigns to be organised in the best logical order. It has already been successful in the US auditing community.


Hoskyns Modular Application Systems (MAS), are a total systems approach to the information and control requirements of organisations. During the past ten years MAS elements have been built for most applications in industry, finance and commerce. Over 1500 MAS elements have been installed worldwide. The table below gives an overview of some of the major sectors covered by MAS and other Hoskyns standard systems.

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| Banking | ✓ | ✓ | | | | | | ✓ | |
| Distribution | ✓ | ✓ | | ✓ | | ✓ | ✓ | | |
| Foundries | ✓ | | | | | | | | ✓ |
| Hotels | | | ✓ | | | | | | ✓ |
| Housing Associations | ✓ | | | | | | | | ✓ |
| Insurance | | ✓ | | ✓ | | ✓ | | | ✓ |
| Leasing and Hire Purchase | | ✓ | | | | ✓ | | | ✓ |
| Manufacturing | ✓ | ✓ | | ✓ | ✓ | ✓ | | | |
| Retailing | ✓ | ✓ | | ✓ | | | | | |
| Shipping | ✓ | ✓ | | ✓ | | ✓ | ✓ | | |
| Vehicle Contract Hire and Fleet Control | ✓ | | | ✓ | | | | | ✓ |
| MAS run on a wide variety of computers, including the major manufacturers shown here. | IBM ICL | DEC HP IBM TI | INTEL TI | If you would like further information on any MAS, please contact Brindley Reynaud at Farringdon Road. | | | | | |

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## OP SPOT

by Bernard Allen

# Educate your colleagues on the operator's role

IN my early days as Op Spot columnist I put a straightforward but loaded question to some prominent members of the operations fraternity: "Why are operators treated as the poor relations of the computer industry and what can we do to rectify the situation?"

The answers I got were both interesting and stimulating, but no-one was able to come up with a workable solution to the problem.

Discussion centred around whether operations should be treated as a trade or profession. One person said that operators had been treated badly from the early days, while another blamed many of the ills of the industry on bad management.

Two years later I find that question cropping up time and time again in my conversation with operations people ranging from trainees to managers.

Early on I would point to the lack of training and career progression opportunities, and the fact that operators get paid less than programming and systems staff. But such an answer is little more than a cop-out — they are not the real ills of operations, just the symptoms.

The fact is that the rest of the industry really does need to be educated about the role operations staff play. It is important that they have at least some idea of what operators get up to after they have gone through the security doors and into the air-conditioned environment of the computer room.

I am not just talking about the powers that be, the DP managers, although if they realised the true value of the operators the situation would improve vastly.

I'm including the DP staff who work outside operations. As an example let me relate the essence of a conversation which took place between the DP manager's secretary and a data controller at an installation where I once worked as an operator. The guy from data control complained that he was a bit bored and would like to learn something about operating during his spare time.

The conversation went something like this:

"Shouldn't be too difficult. I'll have a word with the operations manager," he said.

"Oh yea," replied the other, "shouldn't be too difficult. And it's always handy to have two strings to your bow."

My shift leader and I overhead this conversation and both of us smiled, as we had heard it all before. (Well, he had heard it all before as he had been in the industry a lot longer than I.)

Anyway, after trying his luck in the computer room, the data controller came to the unexpected conclusion that operating the system was much more involved than he had anticipated. He returned to data control and is still there, as far as I know.

And so, for those considering operating as the second string of your DP bow (I realise that this only happens at the very small installation) let me give you some idea of what life in the computer room is like.

Let's be absolutely clear about this — certain members of the operations fraternity are so skilled and experienced that their role is more aptly described by the term "technician" rather than "operator."

The fact that operators are often dubbed "button pushers" would be a joke if it were not such an insult.

The typical operator's skills range from operating bursting and decollating equipment right through to solving complicated job control language problems, and sorting out system loops and wait states.

In between those two extremes come operating peripherals such as printers and card readers, and running the main console under normal circumstances.

Such tasks as operating card readers and printers may appear easy. And so they are — until things start to go awry.

Card readers often get jammed and have to be opened up and cleared. A former colleague (he didn't get very far because he liked to have a bit of a laugh at work) was an absolute genius at sorting out card reader and other problems with peripherals.

Many a time I would spend what seemed like ages on a card reader jam, only for him to come over and sort it all out in a few seconds. A more enlightened installation would have sent him on the appropriate courses and made him the hardware specialist of the operations department.

Running the main console is particularly satisfying as you are in control of the entire computer room. If the main console operator is on form he can do much to improve system throughput.

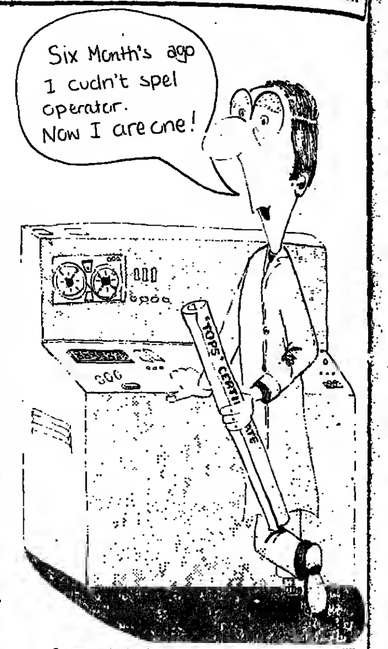
He does this by using the operator commands to re-set job priorities and keeping the other operators on their toes by telling them where and when stationery is to be loaded, and discs and tapes mounted.

But it is when system loops and wait states occur that the top operators come to the fore. If you want to find out who are the best operators at your site, watch for the ones who don't step away from the console when things start to go badly wrong.

The operator who is able to sort out loops and wait states is worth his weight in gold. He can prevent much down time and so help provide the best possible service to the user.

And don't forget what happens when things start to go wrong in the middle of the night shift. The official procedure may well be to contact the job controller or programmer, but many an operator will sit down and sort out the problem himself. That saves a lot of time and trouble.

This column is intended primarily for operations and staff. But this week, why not show it to the other staff at your installation and give them at least some idea of the part you play at the installation.




*Cartoon submitted by operator Dave Townsend, a former ICL operations student.*

## Interpreting aptitude tests

**HERE'S a set of courses which might be of interest to operations managers and chief operators who become involved in staff recruitment.**

**The Independent Assessment and Research Centre is to hold three one-day courses on how to administer and interpret the results of operator and programmer aptitude tests. They will take place on February 14, June 12 and November 28, and cost £90 per person.**

**The IARC is at 57 Marylebone High Street, London W1M 3AE. Telephone 01-486 6108.**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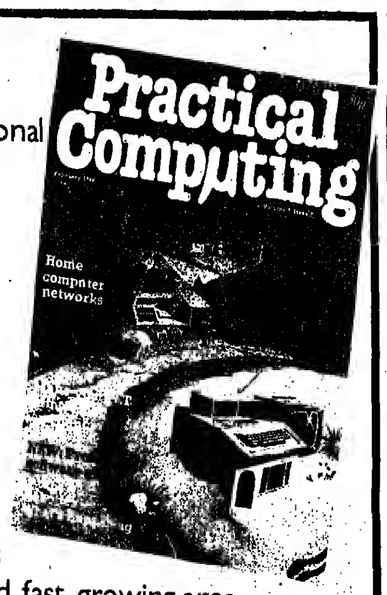


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# Contract negotiating —how to stack the odds in your favour

THE operations manager usually finds the odds stacked heavily against him when he is involved in negotiations with the supplier of a service of new equipment.

The reason is two-fold: most sites buy new equipment no more than once every five years or so. By contrast, the typical supplier makes many sales every year and therefore has vast experience of the procedure involved in negotiating sales and service contracts.

So it is not uncommon for the manager to sign a contract only to realise at a later date that the conditions don't fully cater for his needs or, more importantly, those of the user.

Advice for managers on how to redress the balance is given in one of the latest additions to Data Centre Operations Management by Auerbach.

Entitled Negotiating with Vendors, it tells the manager to draw on the experience of other staff in his company rather than try to handle negotiations himself. In other words, he should form a contract negotiating team.

"The company's legal and financial departments should be represented on the negotiating team. The legal department member can provide guidance on contract terminology and the legal ramifications of pen... and guarantees.

"Representation from the financial department is important when deciding whether to purchase or lease, determining break-even points, and performing present value analysis. Needless to say, one or more of the major users should be included in the negotiating team."

The first step, then, is to form a negotiating team. It should be led by the DCOM (Data Centre Operations Manager) and made up of persons who have some experience of data processing and are interested enough to get involved in the negotiating process.

Current service contracts should be reviewed in order to avoid repeating old mistakes. Once it is decided that a vendor is selected and the "negotiating strategy" is defined.

The portfolio goes into negotiating strategy at some length. The following headings are included:

Prenegotiation planning before each session; the limit over what it wants to achieve during the meeting.

Ploys and tactics. These can be of great help to the customer. For example, the threat to call off the deal if the supplier is particularly hard over certain points.

Type of acquisition — several ways of acquiring computer systems — purchase, lease, rental, lease-back. Here the pros and cons in the team will be valued.

Negotiations should be carried out in a businesslike manner and the manager should try to stay in control at all times.

Data Centre Operations Management, Auerbach Publishers Ltd, Computer House, 24-28 Oval Road, Great Portland St, London NW1, including airmail delivery.

## Effect of VDUs on the eye

THE Association of Optical Practitioners has come up with two more booklets on visual display units and their effect on the eye.

The first, VDUs and You, is written in a simple and straightforward manner. It gives advice on such matters as the siting of the equipment, lighting, and the use of spectacles and contact lenses. It is available in packs of 10, 50 and 100 at £1.75, £8.00 and £12.50 per pack respectively.

The second, Vision and VDUs, is more comprehensive and is intended for employers and medical, safety and personnel officers. It costs £1.50.

Cheques and postal orders should be made out to the Association of Optical Practitioners, whose address is Bridge House, 233 Blackfriars Road, London SE1 8NW.



# New technology 'creates jobs'

JOBS as well as wealth are created faster as a country embraces new technology, according to studies just completed by Mackintosh Consultants for the German government.

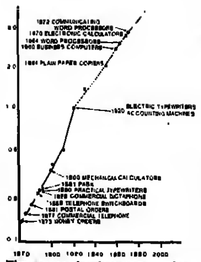
The firm's chairman, Ian Mackintosh, says new technology in Germany has reduced employment in production industries but has more than offset this by stimulating growth of employment of white collar workers.

Mackintosh compares Germany with the UK by showing that since 1965 in manufacturing UK productivity has risen by 40% while employment has fallen 20%. In Germany for the same period productivity has improved 70% but employment has fallen only 10%.

The connection between productivity improvements in offices and the stimulation of growth is demonstrated by Mackintosh in the chart (right). Each invention in office machinery, Mackintosh claims, far from reducing white collar staff, has increased them through "the considerably enhanced business volume which was stimulated by improved documentation."

Mackintosh sounds a warning, however, that endemic structural unemployment is becoming increasingly difficult to avoid, and that nations must address the technical and economic problems with "appropriate vigour." This the UK is not doing at present, he says.

"A radical change in the employment implications of new technology is under way," he adds.




**The connection between productivity improvements in offices and the stimulation of growth.**

# NCR steps up business in the manufacturing sector

NCR is stepping up its activities in the manufacturing sector with enhanced versions of its existing production control packages, IMCS and Mission.

Under development is a hardware/software terminal controller called Industrial Data Collection System, IDCS, which will enable either IMCS or Mission to interact in real time with factory data collection equipment built by Data Pathing. This is the California firm bought by NCR about two years ago and which has now been integrated with NCR's marketing organisation.

A new family of shop floor terminals from Data Pathing has just been announced by NCR and the first member is the 2820 which can come with a variety of data entry devices such as a punched card reader, a magnetic card reader and a bar code reading wand as well as an alphanumeric keyboard. The 2820 has a single line alphanumeric display while another 2800 series model yet to be announced will have a VDU. The 2800 series will also include a portable data collection unit.

The IDCS terminal controller, which should be ready by the end of this year, will enable NCR to offer Data Pathing terminals as part of a complete and comprehensive interactive production control hardware/software package based on an NCR host computer running IMCS or Mission.

IMCS, the Interactive Manufacturing and Control System, is offered to manufacturers with a turnover of up to about £10 million, and can run on an NCR 8200 or 8400 computer. An 8200 based system costs between £27,000 and £45,000 depending on the number of terminals and the amount of disc storage, while prices for 8400 configurations are in the £60,000 to £70,000 area.

Bigger manufacturers prepared to spend at least £130,000 on a production control system can have a configuration running Mission, which stands for Management Information System Support Online from NCR. Mission can run on any NCR mainframe from the 8455 upwards.

IMCS already handles jobs like inventory management, work in progress, materials requirements planning and order processing and has now been enhanced with modules for sales analysis and purchasing and receiving.

Mission, which incorporates the Total database management system, already handles tasks like routeing, costing, materials and inventory management, and has now been enhanced with order processing and work in process modules. Mission was originally developed by NCR for its own internal production control.

# Geest sells software packages for Texas Instruments minis in US

STARTING with a licence agreement in Toronto, Geest Minicomputer Systems has embarked on a programme of selling its application packages for Texas Instruments minicomputers in North America. Geest is far bigger than almost any TI systems house in the US or Canada, having installed 50 machines worth £2 million to date in the UK and several Continental countries.

Geest's application packages cover areas like production control, word processing and Cobol program development as well as general accounting, and Geest believes that few modifications are required to most packages to make them suitable for North American users.

Geest's first deal in North America is with Buckley and Kelling of Toronto, a software house which is diversifying into the systems business following its agreement with Geest.

Geest Minicomputer Systems is part of Geest Computer Services which has announced a turnover of £3.8 million and a pre-tax profits of more than £300,000 for 1979. The service bureau side of the company has just been enhanced by the acquisition of Charrington Computer Services of Bishops Stortford, Herts, which runs a 1902T and will add about £350,000 to Geest's turnover. Geest already runs bureau operations based at Birmingham, Northampton, Peterborough and Cambridge equipped with small mainframes from Honeywell, Univac, IBM and ICL.

Geest Computer Services is part of the £200 million Geest Organisation.

## BBC series on database systems

**THE BBC's Open University department is to begin next month an eight-part television series on database systems.**

**A "field trip" approach to the problem of explaining some of the more difficult database concepts has been used by the producers who visited companies and organisations in the UK and the US.**

**Supporting material will be provided through the OU Student Computing Service, written case studies and the reading of Principles of Database Management by James Martin.**

**The first part will be broadcast on February 10.**

# Harris Corp plans to operate US satellite network

HARRIS Corp in the US plans to operate a satellite network for internal voice, data and facsimile transmission between its headquarters in Melbourne, Florida, and two major manufacturing plants in Dallas, Texas, and Westerley, Rhode Island, as soon as it is granted permission from the Federal Communications Commission.

It will install ground station equipment of its own make, based on 36-foot dish antennae able to work through any of the commercial communications satellites.

The company expects to save the $1 million cost of the installations in one year from long distance telephone charges alone, and it will also use them to demonstrate equipment to potential customers in the private satellite network market, which it expects to be worth over $300 million in the next five years.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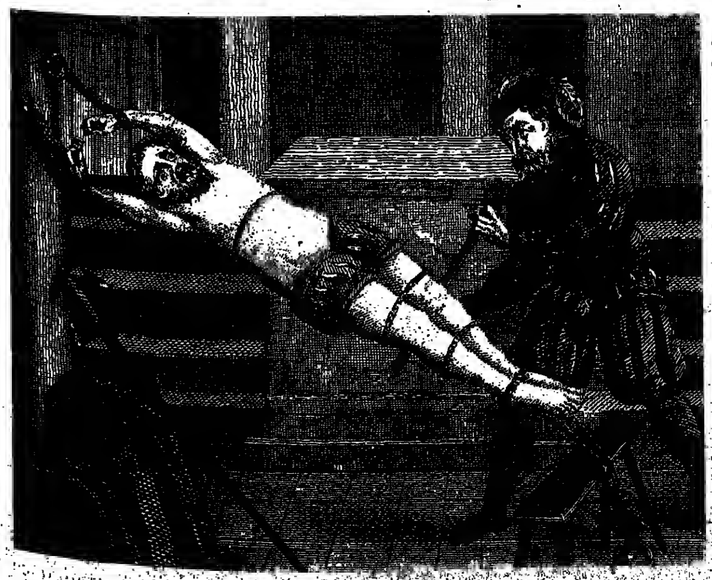

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# PEOPLE and EVENTS

A specialty-made silver magnetic tape was presented to Compower, the nationwide bureau service, by Control Data, which recently manufactured its three millionth meghetic tape. Sandy Potars, sales manager of Control Data Sot, said, "We chose Compower because they are very good customers. Last year they bought more than 13,000 tapes."

The ceremony took place at Compower headquarters at Cannock, Staffordshire. In our picture (left to right) are Malcolm Kermen, technical manager of Control Data, Alan Gill, UK director of Control Data, George Bannermen, managing director of Compower and Sandy Potars.

## Microsystems at GMS

GMS is to launch a new microsystems division in the spring. Martin Kempton has been appointed manager of the department which is to offer microcomputing packages to first-time users in the North of England. He has previously worked for British Titan Products, the British Steel Corporation and Davy Computing Services.

Christopher Ball has become training consultant for GMS Microsystems. He joins the company from the NCC. Nicholas Fareham, a former teacher who has been with GMS for 14 months, is sales executive responsible for selling the range of financial and administrative packages which the company offers as a bureau service.

Grahnm Burke has been appointed director and general manager nf Plessey Communication Systems. For the past 12 years he has been with ITT Business Systems Group and was formerly general systems manager for the whole ITT Business Systems group in the UK.

Michnel Beer, Petcr Newton and Derek Roach hnvc bccn appointed nssociate directors with Mscrcol Computer Services. Jim Trusson has token over ns divisinnal mnnager after spending some years as a senior project manager in Marcol's IBM division.

Chris Young and Ken Cockerill have become sales executives with Elbit Doto Systems. Ynung, formerly with Prime Computer, will be responsible for the Midlands. Cnckerill, who is to take charge of the North West, previously worked for Redifon.

## Planning for the 80s

CHANGES in the working lives nf the pupulation and the effects of the technological revolution will also meon changes to in the working methods of local government. These topics are to be discussed at the national computing seminsr organised by Lamsac and to be held from June 30 to July 3. The event is aimed at those involved in short and long-term planning of council activities. Details can be had from the Director, Lamsac, 3 Buckingham Gate, London SW1.

## Managing director of Eurocom Data

EUROCOM DATA, the UK subsidiary of Eurocom Data (Holdings) has announced the appointment of **Ken Jamieson** as the company's managing director.

Eurocom Dota (Holdings) is the European COM service company owned by National Westminster Bank.

Jamieson has been with the company since its inception in 1974 and has been a director and senior manager UK since 1977.

He has also held positions with ICL and Rowntree Mackintosh.

**Philip Dobson** and Jim Pearcy have been promoted in the business systems msrkating division of Univac. Dobson has become notionnl sales supervisor for manufacturing systems and special projects. He was formerly a sales executive. Pearcy becomes sales supervisor of system house sales. He joined the company in 1978 from Honeywell.

**William Orthwin** is the new chairman of McDonnell Douglas Automation. **Joseph Quackenbush**, previously executive vice-president, becomes preaident.

**Graheme Vowles** has joined Computer Machinery Compsny as territory manager for Birmingham and becomes responsible for sales of CMC products in the ares. He joins the company from Kode, where he sold transaction processing and data prep equipment.

## NCR Golf Championship

**THE National Losg Diiving Golf Championship is to be sponsored for the second year by NCR. Thn competition, opan td both amateur and professional golfers, is in aid of the Golf Foundation.**

**This ynar the winner of the contest will receive £1,500 and the runner-up £500. Other finalists in the junior and senior sections will receive £20.**

**Four regional heats will be held throughout the UK between July and September and the final is to take place at Stoke Poges Golf Club on September 29.**

Bonny



Kitchen

**David Bonny** has become national accounts manager of Geeat Microsystems. After aix years with IBM he joined Reytheon-Cossor Data Systems aa insurance industry salesman and later became Post Office account manager. In his new position with Geeat he will be responsible for the national accounts division.

**John Kitchen** haa become a consultant with BIS Applied Systems, where he will specialisa in the executive sccllon. He waa previously a management consultant with Annan Impey Morrish.

**John Wood** has become area credit manager for Western Europe with Ampex. He has recently been responsible for credit functions with a number of companies related to the computer industry.

**Frank Gibbs** hns become sales executive for Oxfordshire with Computer Automation. He was formerly general mnnoger with Digico and a sales executive for OEM products.

Schmitt

Allie

**Helmut Schmitt** haa becnme the European segment marketing manager of Nntionnl Semiconductor. He was formerly technical director of n West German computer company. In his new position, Schmitt will hava 'peraonnel reaponsibility for consumer, data processing, telecommunications and automotive and military markets reporting to him.

**Abdalla Allie** is CMC's new branch support manager for the North-east Home Counties. He joins CMC after two yeors at Plassey of Taplow where he waa a principal engineer. He has also spent three years with Global Business Projections of Nairobi as a DP executive in software development and marketing.

**Gerald Penney** has joined Systems Designers as sales manager of the large electronics groups. He previously spent seven yenrs in Conada with Kimberley Clarke and Noronda Mines, whcre he held seninr management posts in data processing and systems design.

## Northern Software contract firm

A FULL contract service organisation has been launched by Northern Software Consultants, the UK msnufacturers of application software. Tha new company, NSC (Programming) Ltd, to be headed by general manager Eddie Blaka and customers are expected to range from sm mainframe systems upwards to expansion of Northern Software Consultants, NSC (Programming) aims to provide tailor programming solutions r specific requirements fcr feasibility studies through t systems operation.

**Clark Daugherty** has become a member of the board of Documatioh. He is current chairman and chief executive officer of P. R. Mallory and executive vice-president of the Industrics.

**Matthias Weiss** has been sales manager of Data Europe, o new post within tek, a wholly owned s of Honeywell. Weiss s erly with Fairchild Mini product marketing manag sales manager for the com integrated circuit product

## DIARY

**FEBRUARY 4**

Automation of small batch manufacture. IMechE applied mechanics group. Institute of Mechanical Engineers, 1 Birdcage Walk, London SWt. Tel 01-222 7800 ext 204.

The trade union perspective of computing. BCS East Anglia branch. Norwich Union Offices, Norwich. 10.00.

Meeting. BCS Fortran specialist group. Herlot-Watt University, Edinburgh. 10.45. Tel: 0533 554455 ext 165.

The use of microcomputers in electricity distribution. BCS East Anglia bronch. Russell Road, Ipswich. 19.00.

Visit to Open University. BCS Bedfordshire bronch. Milton Keynes. Apnly via secretary. Tel: 01-637 0471.

**FEBRUARY 5**

A look at the new Ansi Cobol standards. BCS North West London branch. Railway Hotel, 300 Oldfield Lane, Greenford, Middlesex. 19.30.

**FEBRUARY 6-7**

IBM CUS telecommunications group. Palace Court, Bournemouth. Tel: 01-551 1643.

**FEBRUARY 7**

Visit to Lloyds. BCS Kent branch. Chatham. 19.30.

The future of BCS and presidential visit. BCS Chester and North Wales brsnch. Half-Way House, Cunnah's Quay, Clwyd. 19.30.

**FEBRUARY 12**

Map-making by computer. BCS Croydon branch. Fairfield Halls, Croydon. 19.15.

Voice response systems. BCS Harlow sub-branch. Snxon Inn, Harlow. 19.30.

Use of computers in MR weather forecasting. BCS Newcastle branch. Barrass Bridge Refectory, University of Newcastle, Newcastle. 19.00.

**FEBRUARY 12-13**

IBM CUA small systems group. Holiday Inn, Leicester. Tel: 01-551 1643.

**FEBRUARY 13**

Technical directions. BCS Bristol brsnch. St Vincent Rocks Hotel, Clifton, Bristol. 10.15.

Computers in newspapers. BCS North London bronch. West Lodge Park Hotel, Cockfosters. 18.45.

CAD at Fords. BCS Sussex branch. County Hall, Lewes. 19.30.

Computers in the 80s. BCS Humbersida branch. Hull College of Higher Education, Hull. 18.30.

**FEBRUARY 14**

The IBM System 38. BCS advanced programming group. Prudential Assurance, Holborn Bars, London.

What are networks? IDPM Essex branch: County Hotel, Chelmsford. 20.00.

IBM CUA Scottish group. Dunblane Hydro, Dunblane. Tel: 01-551 1643.

Here computers any place in the doctor's surgery? BCS Oxford subbranch. Staff Coffee Lounge, Oxford Polytechnic, Oxford. 19.45.

**FEBRUARY 18**

Controlling EDP in the 80s. BCS auditing by computer group. Peat, and Marwick, 1 Puddle Dock, London. 18.30.

Alternatives to microprocessors. Microprocessor applications group of the IEE. IEE, Savoy Place, London. 14.00.

**FEBRUARY 21-22**

IBM CUA oparations group. Shakespeare Hotel, Stratford-on-Avon. Tel; 01-551 1643.

**FEBRUARY 27**

Microprocessors for developing countries. D. Waller. Followed by wine and cheese. BCS specialist group for developing countries/ British Council. British Council Students Centre, Portland Place, London. 18.15.

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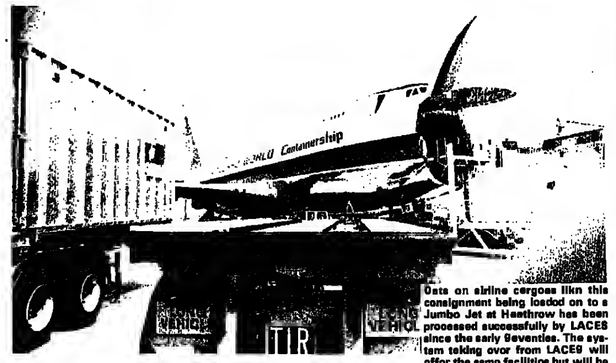
# Cargo DP system to succeed LACES takes shape



Data on airline cargoes likn this consignment being loaded on to a Jumbo Jet at Heathrow has been processed successfully by LACES since the early Seventies. The system taking over from LACES will offer the same facilities but will be less centralised. The biggest airline users will run by inventory control on their own machines and Customs clearance will be handled by a functionally separate system that is to link with LACES.

LINKS between the international airline network, Sita, and the Post Office Packet Switched Service will form part of the system that is scheduled to take over from the London Airport Cargo EDP Scheme, LACES, in October of next year.

The culmination of the project called Airline Cargo Processing in the Eighties — ACP80 for short — the new system will centre on the Harmondsworth installation of the Post Office's National Data Processing Service, the same site that operates LACES.

LACES runs on ICL System 4 machines at Harmondsworth and a lot of the existing LACES software will run under emulation as part of the ACP80 operation. It will probably run on ICL 2900s under DME System 4, but no final decision has yet been made on the mainframe hardware to be used. Other manufacturers, notably IBM, could be in with a chance.

The ACP80 system will differ from LACES in several important ways. One big difference is that the major airlines — British Airways, Pan Am, TWA, KLM and Alitalia — will run cargo inventory processing on their own machines instead of on the Harmondsworth system. Called Airline Systems Inhouse, the airlines' inventory operations will interface with the Harmondsworth system via Sita and the PO's Packet Switched Service.

PSS will also be used to transmit cargo data between the computer systems of all airline users and terminals at the 200 freight agents that are moving over from LACES to ACP80 with the airlines.

To interface with PSS the data communications protocols used by the airlines, like Univac Uniscope 100, will have to be converted to the X25 packet switching protocol employed on PSS. The airlines will use a version of the Communicator protocol converter from Casu Electronics of Northwood Hills, Middlesex.

All the freight agents and the remainder of the airlines using the ACP80 system will continue to have cargo inventory processed at Harmondsworth, the ACP80 system acting effectively as a bureau for them. But the key feature of LACES, the real time clearance of imports for the Customs, will be handled by a functionally separate system from ACP80 instead of being integrated with inventory control as it is with LACES.

The new Customs clearance system will be called Departmental Entry Clearance System, DEPS. One vital feature of DEPS is that it will handle real time clearance of imports for Customs at big seaports as well as at Heathrow airport.

The Ferranti Argus minis ordered for the seaports about two years ago (CW, September 1, 1977) will act as terminal controllers and will also validate cargo data before it is transmitted to DEPS at Harmondsworth for clearance. Imported cargo data from Henthrow will be passed on to DEPS after being processed by ACP80. The two systems will probably run on the same hardware.

DEPS was originolly to be operated at n new Customs computer centre at Shoeburyness, Essex, with high speed links to Harmondsworth. But last year Customs decided it would be easier and chcaper to get NDPS to run DEPS alongside ACP80 at Harmondsworth, and abandoned the Shoeburyness project despite protests at the time from local DP staff.

NDPS had to compete with Computer Sciences and Scicon for the contract to run the ACP80 system. Computer Sciences says that it offered a system based on multi-minicomputers while Scicon bid with a system based on Univac mainframes. But NDPS was always favourite to win the contract.

## ADAPSO calls for action against AT&T

**THE Association of Data Processing Service Organisations has petitioned the US Department of Justice to take action against AT&T's sale of software products, in particular the Unix operating system which is widely used on Digital Equipment PDP-11s.**

**Eighteen months ago the Justice Department authorised an investigation after a similar charge by the Computer and Communications Industry Association concerning AT&T's alleged violation of the 1956 Consent Decree (CW, August 3, 1978). The CCIA contended that the software products marketed through Western Electric, AT&T's supply arm, went far beyond the manufacture of "products used directly in the common carrier network."**

**Unix was released to companies in the competitive private sector in 1973 after its development at Bell Laboratories, and is estimated to have over 900 users outside Bell Systems. An LSI-11 version of Unix is being developed by a New York software house, Whitesmiths.**

## Computing is a great game for Terry, 15

**FIFTEEN-year-old Terry Brown raised a few laughs when he described his 19 months' experience of computing to the Selmic microcomputer club in South East London.**

**He began by recounting his decision to take up computing as an optional subject at Crown Woods Comprehensive School in Eltham, which he was advised against by both his teacher and his brother — because his brother had already tried it and had droppnd out through boredom.**

**Three months later Terry faced his first hurdle: persuading his fothnr to buy him a Nascom 1. He then went on to team up with classmate Carl Lloyd-Parker, who had even more completely mastered the available machines, and together they financed the expansion of their Nascoms and finally their replacement with Nascom 2s by writing games programs to be sold on cassette at the 1978 Microcomputer Show (CW, July 12, 1979) and through Compshop in Barnet, Herts.**

**● The next club meeting will be at Thames Polytechnic School of Architecture, Woolwich, on February 13 at 7 pm, when Dr Tom Crowe of the Polytechnic will try to cover "Everything You Always Wanted To Know About Micros, But Were Afraid To Ask."**

**Club chairman John Williamson is working on the provision of residential weekend meetings in Dartford, Kent, so that people can come from further afield to take part in special interest group activities.**

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# MICRO NEWS

by Martin Banks

## Wide range of services from Jermyn

A NEW microcomputer applications consultancy has been launched as a division of the Jegmyn electronic components distribution group. Called Jermyn Microtec, it aims to offer an all-embracing consultancy and design service, primarily to industrial markets.

The division is being headed by Chris Nabavi, who has joined it from the Electrical Research Association. He is seen here (centre) surrounded by the rest of the Microtec team.

Based at Bourne End, in Bucks, the consultancy will provide publications, awareness courses tailored to specific client requirements, feasibility studies, applications consultancy, hardware and software design services and project management.

The Jermyn Microtec team

The Jermyn Group has come into the micro consultancy business fairly late, a fact acknowledged by the company's director of business development, Pat Otter. But he feels that the new division has something specific to offer.

"There are reckoned to be some 650 Mapcon authorised consultants", he said, "but it is an interesting exercise to eliminate from these all those operations that cannot provide a complete service. By this I mean those that specialise in particular applications areas, those that provide only partial services, such as consultancy but no design service, and those that specialise in just one aspect of the subject, such as software. With these eliminated, we estimate that there are perhaps only 10 consultants capable of offering a complete service to the client."

At this early stage, Jermyn Microtec has a specialisation towards instrumentation applications, but according to Chris Nabavi, the planned increase in staff will also allow the company to move into the process control field as well. "We do not, however, plan to specialise in any one industrial sector," he said.

## 'Trend away from custom built ICs'

FOLLOWING a different track towards the future of the semiconductor industry during the 1980s than some of the leading lights of that industry, the US consultancy Frost and Sullivan has predicted that the commercialisation of VLSI processing technologies will lead to much greater standardisation in circuit design, and therefore will obsolete custom approaches to high density circuits.

The means of differentiating between the requirements of different end user applications will be through software routines, the company's latest projections indicate.

This tends to contradict the views expressed last year by Gordon Moore of Intel, when he suggested at the International Solid State Circuits Conference in Philadelphia that the advent of VLSI processing would greatly reduce the potential applications areas for the merchant semiconductor suppliers because the device complexity possible would make definition of future mass market circuits almost impossible.

By the same token, he felt, this would mean that custom designed circuits produced by systems companies vertically integrating into the components market with custom designed parts would become a significant factor in the marketplace (CW, February 22, 1979).

A report by Frost and Sullivan, called The Solid State Memory Market in the US, centres its predictions on the potential movements and developments that are likely over the next few years in that area. The report raised the point about VLSI processing to back its prediction that there would be a significant growth in high density PROMs and EPROMs concurrently with this trend, as the means of providing the needed software routines.

It sees world-wide shipments of memory devices by US semiconductor companies rising to $3,700 million by 1985, from a 1979 level of $1,400 million. In that time-frame the price per bit of memory will drop from 0.04 cents in 1979, to 0.006 cents.

In the RAM market, where the report predicts a 68% annual growth rate to 1985, Frost and Sullivan sees the complete demise of the 1K device, the waning of 4Ks, a peaking of the 16K market, as well as the 64K memory. By the end of the period, a growth cycle will have started for 256K-bit RAMs.

While it predicts little activity in the CCD memory area, it sees a different picture for bubble devices. It foresees a 4-megabit memory within three years, and predicts a 50% annual growth rate in the market for them.

### A second look

MICROCOMPUTER software houses Micro Focus is setting up a research and development operation in Swindon. Occupation of offices in the John Murray Tower in the town will start next month, with a team of 21 people.

## Retailers appoint a permanent secretariat

THE birth-panga of the Computer Retailers' Association should soon be passing, now that it has decided to appoint a permanent secretariat.

At an extraordinary meeting of the association last week, chaired by Tim Kaen of Kaan Computers, the vote eventually went to Helen Gibbons, who runs a small company specialising in providing secretarial services to small trade associations and professional institutions, such as the Association of Franchised Distributors of Electronic Components.

Several suggestions had been put forward as methods for establishing a permanent secretariat for the association, including some form of connection with the National Computing Centre. This was eventually voted down, primarily because of members' doubts about being too closely involved with a government body.

Now that the basis of an organisational structure has been arrived at, the CRA should be free to tackle some of its other problems. Among these is the question of membership, which currently stands at about 30 companies. The association would like to see this rise to over 100 fairly quickly.

There should be considerable scope for this, for it is estimated that over 200 companies in the UK meet the CRA's conditions.

It should also be able to tackle the declining of standards of operation, service and support that member companies should offer, with methods of policing them.

## Horizon will cost more

PRICE of the Horizon microcomputer system is to rise next month by about 10%, its US manufacturer, North Star, has announced.

The increase, which is intended to accommodate inflation, according to the company's marketing director Bernard Silverman, will cover both retail outlets and OEM purchasers.

Examples of prices include $2,995 for a Horizon 1-32K, one off, while the 100-up price will be $1,890.

In this country, Horizon distributor Comart said last week that the new prices would affect UK pricing at some stage, probably when the newly-priced stock starts arriving. This could be by the middle of March.

## Systems house formal launch

BACKED by film processing company Gratiapool, micro systems house Micro Scope was formally launched last week, with its first product the Microspace reservation system.

The company aims to produce commercial and industrial systems built around system hardware. Microspace is configured around a Cromemco system 3 equipped with 112K bytes of RAM and one megabyte of floppy disc storage.

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# COMPANY NEWS

## Bit-slice mainframe hopes for Sperry

OUT of step with its US mainframe competitors who all work to a calendar year, Sperry Corp's financial year ends in March. The company is therefore reporting on its third quarter in which it achieved net profits up 19.8% at $68.4 million on turnover up 14.8% at $1,039 million. Future business is booming with backlogs up 19% on the figure a year earlier at $3,600 million.

**COMMENT**

WARS and rumours of wars have transformed the economic outlook since Christmas, and computer companies will benefit from increased defence spending.

The US mainframe manufacturers do substantial military business and, with all the majors apart from IBM and its compatible competitors reporting very good 1979 figures, the prospects for a blanket recession this year are rapidly receding.

UK companies like Hawker Siddeley, GEC, Racal and Plessey will be looking for increased business at home and abroad, and Decca's strong defence interests back up City consensus that Racal is getting Decca very cheaply.

Ironically, unlike its US competitors ICL may be a net loser, since it does little defence business and is likely to forfeit any new business it might have won in the Soviet Union as a result of government sanctions over Afghanistan.

While military expenditure may postpone the growing recession indefinitely, it is bad news for the UK and US governments' fight against inflation, since it inevitably means significant increases in government expenditure at a time when both administrations are trying to beat inflation with sound monetarist policies.

The reasons for boosting defence expenditure are, anyway, hardly anything to cheer about — but the aim is after all to make war less, not more, likely.

For a direct comparison with its competitors, the running figure for the 12 months was up 21% at $259.2 million on turnover up 12.8% at $4,586 million.

Despite setting ambitious plans for the new bit-slice 1100/60 mainframe, the Univac division reports that orders for the machine were well ahead of plan, and also continue strong for the top-end 1100/80.

For the quarter, Univac orders were up 9%, turnover rose 14% and the backlog rose 11% compared with the same period last year. The figures for Univac have not been broken out, but the company accounts for about half of Sperry's business.

### Business data on Prestel

AVERAGES of company performances in 120 sectors of industry are now available on Prestel provided by Inter Company Comparisons, publishers of ICC Business Ratios, on the Baric database.

The averages for each sector, based on up to 100 companies' results, cost 15 pence a frame to access. Sectors include computer services and electronic equipment manufacturers and others. Performance indicators include profitability, export ratio and sales per employee.

### Profits 31% up

RAYTHEON, the US parent of Data Logic in the UK, has reported net profit up 31% at $197 million on turnover up 15% at $3,728 million.

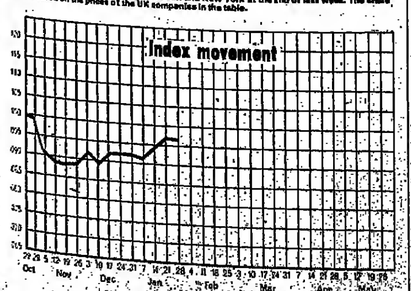
## CW SHARES TABLE

Index 66.58 Change −0.49

Fri 25/1/80

| Pence London Stock Exchange 1980 High | Low | Stock | Pence Price | Change | $ New York Stock Exchange 1980 High | Low | Stock | $ Price | Change |
|---|---|---|---|---|---|---|---|---|---|
| 770 | 730 | Applied Comp Tech | 770 | +23 | 16¼ | 13⅝ | AM International | 15⅝ | +1⅛ |
| 43 | 41½ | Brown Boveri Kent | 43 | | 21⅛ | 18¼ | Ampex | 19¼ | +1⅛ |
| £34 | | Burroughs | £34¼ | +£1¼ | 39 | 38¼ | Automatic Data Proc | 38 | +⅜ |
| 76 | | Chubb | 76 | | 56 | 52⅛ | Burroughs | 53⅝ | +3⅜ |
| 118 | | Cole | 118 | −1 | 20¾ | 18⅝ | Computer Sciences | 20⅜ | — |
| 90 | | Co-Op Bank | 90 | +4 | 89⅝ | 83 | Control Data | 88⅛ | +2 |
| 198 | | Data Logic | 198 | −10 | 71⅜ | 68⅛ | Digital Equipment | 70⅝ | +2⅜ |
| 173 | | Delta | 173 | — | 37⅝ | 32⅜ | Harris | 37⅛ | — |
| 157 | | Exmet | 157 | −11 | 94⅛ | 87 | Hewlett-Packard | 94⅛ | +3⅜ |
| 480 | | Ferranti | 480 | — | 50¼ | 50½ | Honeywell | 50¼ | +⅜ |
| 258 | | GEC | 258 | +2 | 86½ | 84¼ | Intel | 86½ | −1 |
| £284 | | Hawker Siddeley | £284 | +£1¼ | 70⅜ | 69⅛ | IBM | 70⅜ | +⅜ |
| £31 | | ICL | £31 | +£¼ | 18⅜ | 18⅛ | Memorex | 18⅜ | +1⅛ |
| 64 | | Kalamazoo | 64 | −5 | 48¾ | 46¼ | Micrordi | 48⅜ | +⅜ |
| 88 | | Cook Inter | 88 | −1 | 33 | 31½ | National Semi | 32¾ | +1⅛ |
| 310 | | Micronik | 310 | −10 | 78⅛ | 67⅛ | NCR | 78⅜ | −⅛ |
| £243 | | Molins | £243½ | +£½ | 43¾ | 41 | Perkin-Elmer | 43⅝ | +1⅜ |
| 103 | | Norcros | 103 | −3½ | 50⅜ | 48⅛ | Rockwell Inter | 50⅜ | +2⅜ |
| £108 | | Plessey | £108 | +£3 | 101⅛ | 98 | Schlumberger | 101⅛ | +2⅜ |
| £142 | | Racal | £142 | +£5 | 57⅜ | 48⅛ | Sperry Rand | 57⅜ | +2⅜ |
| 197 | | Thorn EMI | 197 | +2 | 18⅛ | 18 | Storage Tech | 18⅛ | −⅛ |
| 127 | | Tube Investments | 127 | +8 | 32¾ | 30 | Tandy | 33⅜ | +⅝ |
| 728 | | Vickers | 728 | +23 | 53⅜ | 57⅜ | Tektronix | 52⅝ | +1 |
| £33½ | | Wang | £33½ | +2 | 66½ | 64⅜ | Texas Instruments | 66⅜ | +1⅜ |
| £108 | | Schlumberger | £108½ | +£1⅜ | 47 | 40 | TRW | 47 | +1⅛ |
| £44½ | | Sperry Rand | £44½ | +£¾ | 7 | 6⅜ | Wang | 7 | +⅛ |
| £39 | | Thorn | £39 | +£⅛ | 66½ | 63⅛ | Xerox | 66⅜ | +⅜ |
| £11½ | | Xerox | £11½ | +£⅛ | | | | | |
| £28½ | | | £28½ | +£1¼ | | | | | |

The table shows the closing prices in London and New York at the end of last week. The share index is based on the prices of the UK companies in the table.




### Past the £1m mark

SOFTWARE House Watton, Jeffreys and Partners of Woking, Surrey has topped the £1 million turnover mark for its financial year which ended July, 1979. This represented a 80% increase on the figures for the previous period. The firm was founded in 1971.

## Takeover threat to Muirhead

MUIRHEAD, the UK company whose office facsimile machines are now marketed by the NEB office systems company Nexos, has reported a profit plunge in the year to September 30, 1979.

Profits, which stood at £2.1 million last year, fell to £911,000 on turnover up 6% at £22.5 million. High interest rates, the engineering strike and Iran were blamed.

The US energy systems and services firm, Tyco Laboratories, has increased its stake in Muirhead to 14.1%.

## Amdahl hit by trend of users to leasing

THE continuing desire of users to lease rather than buy their large computers is still squeezing Amdahl's profits. In the fourth quarter, the company managed net profits of only $500,000 on turnover of $82.8 million, compared with $14.7 million on turnover of $98.3 million in the same period last year.

For the full year, net profit was only just over one third of last year's figure at $17.1 million, and turnover was down too, from $320.9 million in 1978 to $299.6 million in 1979.

Even so, the company continued to deliver more machines; the total was up 20% over the year, but turnover and profits were both hit hard by the big demand for leases and by price cuts instituted by Amdahl to match those from IBM.

Leases only show up in turnover and profit figures as the payments come in, which is a major reason why turnover fell during the year.

The company is optimistic that price adjustments to make purchase more attractive than lease, coupled with signs that hardware prices are beginning to stabilise, will cause the outlook to improve in the current year.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The Computer Professionals keep your assets fully employed

**The National Enterprise Board's Nexos office systems subsidiary has not provoked as much political controversy as Inmos, but it is no less ambitious. Tim Palmer interviewed its managing director Muir Moffat, who tells why he believes Nexos is going to win, for the UK, a larger share of the integrated office systems market than the country has in data processing. He says that the giants in this field, IBM, ITT and Xerox, have too many vested interests in obsolete technologies such as copiers, magnetic cards and dictaphones to be able to stay ahead in the race.**

**Moffat sees the main job of Nexos as systems integration rather than R&D.**

The VTS 100 screen word processor is made by Logica and marketed by Nexos. Logica is currently working on a more advanced version.

# Nexos wants a bigger market share for UK

## By Tim Palmer

THE name Nexos is said to have been derived from the root of the Latin word nexus, meaning a bond or linked group, phrase for office systems.

Much the most shadowy of the National Enterprise Board's high technology ventures, the office systems company is beginning to take shape and its ambitions are becoming clear.

Ambitious it is too — no less than to challenge the entrenched might of the US giants like IBM and Xerox, and to win for the UK a much larger share of the world market for integrated office systems than it has managed to win in data processing.

Managing director Muir Moffat believes that it can be done, and that an embryonic company like Nexos is better placed to do it than are the giants with their vested interests in irrelevant office technology.

He also believes that an essential element of the large-scale integrated office system of the near future is what one might call speech processing in addition to the accepted text, message and video processing.

Moffat demonstrates that only a proportion of the potential productivity gains offered by office automation can be achieved by automating the tasks of the secretary.

The gains can go much further if the productivity of managers can be improved.

"Voice — speech — and handwriting are what managers use most to communicate," he says. "Many meetings are held simply to get all the information together in one place, and if we can reduce the need for this, we can cut down travelling time as well as time spent in meetings.

"A system needs to be able to store and forward combined text and voice, so that managers can append voice messages to documents. It is estimated that 70% of attempted telephone interactions fail for one reason or another, although the failures are often hidden from managers because their secretaries try several times before getting the right person. The ability to store and forward speech in a system would help enormously."

Among the problems faced by companies like Xerox and IBM, Moffat believes, is their enormous vested interest in copiers, magnetic card typewriters, dictaphones, computer architectures which cannot accommodate speech.

"When you look at the specification for Xerox's proposed X-ten network in the US, you find it is designed to offer wideband services appropriate to transmitting images — complete documents of the kind produced by copiers. But nearly all the information we need to transmit can be reduced to bits which do not need such wide channels for fast transmission. All you need for digital voice is 64K-bps."

IBM seems perversely committed to small magnetic cards for transferring text and Wang, which in Moffat's view has got its integrated office not pretty much together, nevertheless seems to have overlooked the need for voice, while the whole point of integrated office systems is that they should do away with the mounds of paper generated by Xerox's copiers.

"In one large, well-known company the progress of a single document from senior management was traced. It passed down through eight levels of management over three weeks, and 250 copies were made of it. Or rather, 250 copies were traced — there may have been others."

He believes that to protect this enormous market, the big companies will try to inhibit the adoption of appropriate technology, all of which, Moffat believes, already exists.

Systems integration rather than development of technology is therefore the Nexos role. A first step has already been taken with the commissioning of an interface to enable output from the Logica VT-100 word processor, marketed exclusively by Nexos, to be produced on a Mulrhead facsimile machine. Nexos is taking over the marketing of all Mulrhead's products in this field.

Core and key element of the Nexos strategy is the enormously powerful and highly original Delta II system developed by the Exxon company Delphi of San Francisco. Nexos has paid $2 million for UK manufacturing and European marketing rights for the Delta for office automation applications.

A multiprocessor multi-bus fail-safe system, the Delta was initially developed as the basis of an automated telephone answering service. It therefore already includes what Moffat regards as vital, facilities for marrying speech to text, for speech storage, retrieval and manipulation. Operations can also be controlled using a 200-word voice-command vocabulary, which Moffat believes could be extended by storing multiple 200-word command sets.

The aim of Nexos is to be able to offer all the elements of a complete integrated office system for a large company. The inclusion within the system of data processing as well is a possibility, but Nexos envisages providing all the necessary interfaces and protocols to enable the system to be linked to any manufacturer's mainframe so that a company can tie it into its existing DP facilities.

Substantial software for the Delta has to be developed over the next 12 months and much of this could be subcontracted to software houses.

The company's product strategy is to have a pyramid of products with low-cost mass-market terminals at the base, and the Delta at the top.

Logica is working on a bigger, more advanced word processor a year.

A secretarial terminal heavily used for word processing can be priced somewhat higher — perhaps £1,500 a year.

Outside the Delta itself, Moffat also perceives a need for a shared resource controller, which would include support for scanning, high-speed graphics and mass storage, possibly video disc, since in many applications the non-erasability of video recording would be an advantage.

The Delta itself will have a UK base price of about £200,000 and a mini-version for smaller companies is also a possibility.

At the bottom end of the range, a basic electronic typewriter is also needed and the Ricoh daisy wheel printer for which Nexos has UK manufacturing rights could form the basis of this. UDS, bought by Nexos in October, makes the printer.

Moffat is very persuasive, but two important doubts overshadow the Nexos venture. Is an integrated voice facility really as vital as he believes, given that many people regard speech as too untidy and imprecise to be accorded the same importance as the written or displayed word?

If Nexos can convince potential customers of this, the other question is whether a new, small, unknown company can really make a success of such a high-value low-volume product as the Delta.

● For a market which did not exist three years ago, the integrated office communications business is becoming extremely crowded. In the UK, contenders who have shown their hands include GEC with its acquisition of A. B. Dick of Chicago; Plessey, which wants to promote its electronic telephone switch as an office communications product; and Racal, which has formed an information systems subsidiary. Gestetner and ICL are also dipping their toes in the water.

From the Continent, Nixdorf was the first to take the plunge, and Philips, Siemens, CGE and Olivetti are laying their plans while CII-HB and Triumph-Adler are also interested.

In the US, IBM, Xerox, GTE, AM International, and Wang are in the thick of it, while Datapoint has just declared an interest and ITT is still looking for the right acquisitions.

**MOFFAT....With so much technology around there is no need to invent new ones**

**Nexos UK's low cost word processor with single-line display, the C-text, is made by Ropon in Japan and acquired in the takeover of UDS.**

# *Ready to take on IBM and Xerox*

GIVEN that Nexos has big ambitions to slug it out head-to-head with the big boys of the office market like IBM, Xerox and ITT, what kind of company is it generically?

It is primarily a marketing company, dedicated to acquiring very strong systems integration skills.

"There has been a fundamental shift in the balance of power between marketeer and engineer," says Nexos managing director Muir Moffat. "So much technology is now available that it is much easier for a marketeer to recognise an unfilled need and then find an engineer to design a product to meet it. There is so much technology around that there is no need to invent new ones."

In general, therefore, Nexos will be commissioning manufacturers to produce products to Nexos specifications for which in many cases it will have sole marketing rights. An example will be the new, even more advanced word processor being developed by Logica to complement its VTS 100, already exclusively marketed by Nexos will also adopt existing products as it has with the Muirhead line of facsimile machines.

It will have software and systems development teams in house, but will subcontract much of the work, concentrating primarily on quality. To this end it has already made sales force takeover of the marketing company UDS, which has rights to office products from Ricoh of Japan.

With UDS, there are about 16 people in Nexos, 120 of them on the marketing company Nexos UK. About eight people are employed on facsimile products and six to eight in development. Including systems integration and testing, this should grow to between 30 and 50 within a year.

If it has to, Nexos may go into manufacture itself, but would prefer not to while there is spare capacity in the UK.

The National Enterprise Board has 90% of the shares in Nexos is not precluded from taking stakes in companies in which it collaborates, if a shareholding would cement the relationship. It is not, however, on aim.

Nexos welcomes the government's plans to sell it off to the private sector once it is a viable company.



## Men, Machines and Money is users' theme

**FORUM 80, the annual conference of the IBM Computer Users' Association, will take place at the Royal Bath Hotel, Bournemouth, from Tuesday to Thursday, April 15 to 17. The general theme is Man, Machines and Money, and star performers include Robert Mackenzie on the economic state of the nation, and Edward de Bono on lateral thinking.**

**IBM chairman and chief executive Eddie Nixon will give a round-up of the last 12 months; Reay Atkinson, now Under-Secretary for Computers, Systems and Electronics at the Department of Industry will talk about microelectronics in the UK, and Howard Anderson, president of the Yankee Group will discuss computers in the home.**

## Fujitsu develops Josephson junctions

FUJITSU of Japan is the latest company to announce a breakthrough in Josephson junctions, semiconductor elements which need temperature close to absolute zero to operate. Josephson junctions, named for the UK physicist Brian Josephson, came in for widespread publicity last year as a result of the work IBM is doing in its research labs.

Fujitsu has announced that it has reduced the number of active elements required to make a one-bit memory cell from seven to three. It hopes to have a 64-bit memory device by 1981, but emphasises that the work is experimental.

Also in Japan, Nippon Telephone and Telegraph is working on Josephson junctions, and plans to use liquid hydrogen rather than liquid helium to cool the devices to the very low temperatures where resistance to the flow of current disappears and materials "superconduct," (CW, January 3). NTT also claims that it can make the circuits work at temperatures between 15° and 20° above absolute zero, where both IBM and Fujitsu talk of 4° above.

The Swede L45-20.

## Sweda introduces new family of cash registers to UK

THREE new electronic cash registers with special "paged" keyboards have been introduced in the UK by Sweda.

Called the L45 family of ECR's, comprising the L45-20, L45-25 and L45-30, they have been built to Sweda's specifications by the Japanese register company Omron.

Smallest in the family, the L45-20 provides the user with price look-up facilities for 170 items, a breakdown of transactions by 100 department totals as standard, a two-station alphanumeric printer (third printer optional) and the ability to accept nine methods of payment.

If more than 100 department totals are required Swado has provided the user with a "paging" system for keyboard headings; by flipping over the top "page" or template of the keyboard (the keys remain stationary) a microswitch is operated and a new set of keyboard headings on the second level come into use.

In addition to these features, the L45-25 has a transfer mode which can be used for transferring information from one register in one or more other registers.

Both the L45-20 and L45-25 are available in the UK now, and the L45-30 will be supplied from the end of this year.

Prices range from £2,400 to £3,200.

## Housing repairs on System 34

FACED with the problem of handling about 900 repair requests a week from tenants in 12,500 homes in the district, Wrekin Council has installed an IBM System 34 and four VDUs on which to run its housing maintenance service. It replaces a manual service which involved filling in special job tickets after a clerk had found the relevant house information card.


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*Structured Analysis*
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*Structured Programming*
*Functional Decomposition*
*Data-Directed Design*

*The Basic Tools*
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*Data Dictionary*
*Data Structure Diagrams*
*Nassi Shneiderman Charts*
*Decision Tables*
*Warnier Diagrams*
*Structured English*
*Pseudocode*
*Stick Diagrams*
*Structure Charts*
*How to Develop the Design*
*Evaluation of the Design*
*Packaging*
*Optimisation*

*Practical Problems*
*Developing the Design*
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*Measurable Objectives*
*Estimating*
*Controlling Detail*
*Resistance to Change*
*Personnel Assignment*
*Software Package Selection*
*When to Use Which Method*
*Fitting to Your Standard*

*Using The Methodologies*
*Request Evaluation*
*System Survey/Feasibility*
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*Definition of Physical Alternatives*
*Detailed Logical Design*
*Top-Down Implementation Plan*
*Detailed Physical Design*
*Post-Evaluation*

*The Workshop uses a large number of exercises featuring "real life" problems.*

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The Instructor is Ron Taylor, the President of EDUCOMP. Ron is British and a former Assistant Director of the Management Systems Training Council. He has unrivalled experience of Structured Methodology. On a consultancy basis, he has installed the methodologies, prepared standards and managed implementation in a wide range of companies from coast to coast in the U.S. and Canada. He has an excellent reputation as a lecturer. Being British, he also has an understanding (often lacking in North America) of the differences in approach needed in the UK as opposed to the U.S. and Canada.

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# Boost for viewdata company

INTELLIGENT viewdata terminals could be the next product to receive a boost from the National Enterprise Board if talks with Technalogics of Liverpool end in agreement. Technalogics has been financed by its three directors since it started work two years ago on developing a personal computer system which could process teletext and viewdata information including telesoftware.

The company has sold 15 units on a made-to-order basis, including one to the Independent Broadcasting Authority, which has been used to demonstrate Oracle teletext.

## WP exhibition

THIS year's International Word Processing Exhibition will be held from May 21 to 23 at the Wembley Conference Centre, under the auspices of the Business Equipment Trade Association. An Online conference will run concurrently.

Allling to separate accounts and conferencing on up to six lines are two of the benefits of digital technology in the GEC SL-1 private telephone exchange which can be conferred an individual extensions from a teleprintor or VDU linked to the processor. Also story, right.

# GEC to launch digital PABX in UK

GEC has become the second company, after Plessey, to launch a digital PABX on the [illegible] market. GEC expects to gain Post Office approval in the summer for its SL-1 exchange, which it makes in the UK under licence from Northern Telecom in Canada. But it is already taking orders and will supply systems in addition to the nine that have been installed for [illegible] evaluation by the Post Office.

Eighteen systems have been ordered so far, including five for Esso which uses them in its US parent company and others for chemical company ICI, engineering companies Bowmaker of Cannock and Davis and Derby of Derby, and GEC's city auditors Touche Ross.

Northern Telecom itself has installed 1,000 systems in 20 countries including Denmark, Spain and Italy, while GEC is negotiating marketing rights for 25 countries in Europe, Africa, the Middle East and the Far East.

The SL-1 PABX can be expanded from 100 lines to 5,000 at a rough cost of £500 a line and can be altered by up to 32 businesses each with its own operator position. It brings to the user the benefits of the combination of digital switching and transmission and stored program control, using time division multiplexing and pulse code modulation.

The exchange will link to Post Office System X exchanges when they appear and can be adapted to provide control of computer networking, data storage access and text transmission.

Facilities for voice telephone use can be allowed or denied to each extension individually; calls can be logged and traffic analysed. Incoming calls can cause a "call waiting" tone to sound in a handset that is in use, or can "hunt" for an available extension within a given group.

CONFERENCES

## Input/output systems seminar

THE 15th annual International Input/output systems seminar will be held from June 10-12, 1980 at the Stockholm Sheraton Hotel, Sweden. It is oriented to the role of input/output systems in the present and future data processing business. For further information contact Carroll Greenhouse, Input/Output systems association, PO Box 80, Stamford, CT, 06904, USA.

The trade association for US computer service corporations Adapso is organising its 22nd annual conference on the theme "Business in the 80's — Orderly growth". To be held from March 31 at the Galleria Plaza, Houston, Texas, the conference will embrace financing, small business, leasing and selling and marketing new business development. Details from Adapso, 1925 North Lynn Street, Arlington, VA 22209 (703 522-5055.

A one-day seminar on electronic information storage and retrieval systems in the pharmaceutical industry is to be held at the Savoy on March 6. The information needs of pharmaceutical companies in connection with research, development and clinical trial activities, will be discussed. It is to be held at the Harwell Education and Training Centre, the registration fee is £25, further details can be obtained from C. Preuveneers, Education and Training Centre, AERE Harwell, Didcot, Oxon OX11 0RA Tel: 0235 24141 ext 3106.

A professor of electrical engineering at the University of Hawaii, Glen Weldon, is to speak at Online's error correcting codes seminar to be held in London from February 12. The latest advances in the field will be discussed and Weldon will outline the state of the art and discuss details of his work for Bell Telephone. Further information from Maureen Nichols, Information Nicholson House, Maidenhead, Berks. Tel: 0628-39101.

The second regional Business exhibition of mini/microcomputers, word processors, electronic components and business machines will be held at the St John's Hotel, Solihull, on February 12-13. A feature of the exhibition will be a series of seminars held each day by the Training and Management Association, which will provide advice and comment and demonstrations of word processing equipment. Further information from Duncan Pratt, Grafton Exhibition Company. Tel 021 454 0406.

Tools and techniques for software development is the title of a five-day seminar by Ed Yourdon and Tom DeMarco to be held in London from February 4-8 and in Amsterdam from February 11-15. Major aspects of software engineering will be discussed including structured analysis, structured/composite design, top-down implementation and structured coding. The seminar is organised by Keith Landon Associates, and further details may be obtained from 8 St Aldhelm's Road, Codicote, Hitchin, Herts.

The Institute of Electrical Engineers has organised a major international conference to examine the use of optical fibres in submarine telecommunications systems. The Sixth conference opens on February 27 and is run in conjunction with the Institute of Electronics and Communication Engineers of Japan, the Institute of Mathematics and its Applications, the Institution of Physics, the Institution of Electronics and Radio Engineers and the Institution of Electricians. The programme also includes a number of technical visits. For further information contact IEE, Savoy Place, London WC2R 0BL. Tel: 01-240 1871.

# Fujitsu modems for US satellite net

SATELLITE Business Systems in the US has ordered 200 time division multiple-access modems from Fujitsu in Japan. The order follows the evaluation since last February of three prototypes, and delivery is to start in April.

The modems are designed to operate in burst mode in ground stations in the SBS satellite communications network due to open in January, 1981. A data rate of 48 megabits per second is achieved by transmitting bursts in fixed time slots at 14 gigahertz and receiving them at 12 gigahertz after conversion in the satellite.

SBS aims to provide large capacity digital links for voice, data, facsimile and video communications in large companies and government agencies.

# Water industry £50m plans

BUSINESS worth between £40 and £50 million will be placed by the UK water industry over the next five years with control and instrumentation equipment manufacturers. This is one of the main conclusions in a report prepared for the Department of Industry by Environmental Resources Ltd.

The report recommends strategies that should be adopted by UK manufacturers for meeting the water industry's requirements for control, instrumentation and automation systems. It points out that a few large multi-national companies and more than 20 small manufacturers currently share between 85 and 90% of the total UK market.

"Water Industry Control Systems: 130 pp, £10, Environmental Resources Ltd, 79 Baker Street, London W1M 1AJ. Tel: 01-486-8277.

# £81,000 NCC grant

THE National Computing Centre is to give Arbat (UK) £81,000 to support work on Intelex. Intelex consists of a range of systems based on Digital Equipment minicomputers, and is designed to give high-volume Telex users a comprehensive operations and management facility. Arbat's Contact-11 message system is based on Intelex-11 facilities.


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PRODUCT NOTES

# Digital wand for scanning bar codes

A DIGITAL wand designed to scan bar codes and produce a logic output corresponding to the bars and spaces has been introduced by Hewlett-Packard's communications division.

Named the HEDS-3000, it is said to offer a data entry method which can be used by unskilled operators with a minimum of training and HP sees markets for the device in retail checkout equipment, access and security control, ticket identification and stock control.

The HEDS-3000 is based on a precision optical sensor of HP's own manufacture which gives specified, guaranteed operation with all medium and low density code formats printed with a minimum narrow bar width of 0.3mm, says HP.

The sensor is sealed in a module near the tip of the wand and is protected by a low friction, replaceable tip moulded in PTFE.

A bifurcated plastic lens projects visible light from an LED emitter on to the sensing plane and focuses the reflected light on to an integrated circuit photo detector.

Signal conditioning circuitry in the wand includes an analogue amplifier and an advanced comparator which takes account of the peak levels in the signal and compensates for amplitude variations.

Because of this, bars of less than maximum contrast can be read, including those printed in any colour other than red. The manufacturer adds that after digitising, an output circuit provides TTL and CMOS compatible output.

To reduce power consumption, the circuitry is only energised when the built-in push-to-read switch is pressed. The positioning of this switch is designed to encourage the operator to hold the wand in the orientation which gives maximum reading sensitivity, says HP.

The lightweight 13.3 cm long plastic casing is moulded in ABS and can be supplied for OEM use.

HP says that as part of a portable data entry system in retail sales the HEDS-3000 can be used to read shelf tags for stock control and order entry.

In related applications, field service or product maintenance, personnel could use the HEDS-3000 for remote data entry.

The system is also seen by HP to have broad applications as a peripheral for microprocessors and microcomputer based systems. Advantages seen in these areas stem from the ability to input programs and data rapidly and accurately.

Hewlett-Packard Ltd (CW), King Street Lane, Winnersh, Wokingham, RG11 5AR. Tel: 0743 784774.

## On-site maintainance

SERVO has announced what it claims to be the world's first on-site disc maintenance service for RK08 and RK07 disc cartridges used on Digital Equipment systems.

The service is said not to affect the data and can be used for five cartridges. The cost is £3.50 plus VAT, says Servo.

Servo Computer Services Ltd (CW), 8 Woodseats Road, Sheffield, S8 0PD. Tel: 0742 584517.

## Digital watch

**FROM Casio comes the F-8C digital watch that uses a lithium battery and is said to last for about three years.**

**Styled with a black case and wrist band, the F-8C gives continuous read-outs of hour, minute, second, am or pm, date of month and day of week, says Casio.**

**For use in the dark, users can press a button which operates a micro light. The recommended retail price is £12.85.**

Casio Electronics Co Ltd (CW), 28 Scrutton Street, London, EC2A 4TY Tel: 01-377 8087.

# More productive impact printers

OLIVETTI has announced three of a second generation of impact printers which, it says, are designed to meet productivity and reliability criteria.

The PR 505 is a desk size daisy wheel printer with a printing speed of 55 cps. It uses the same mechanism as the TES 501 word processing system, says Olivetti, who add that the PR 505 has two optional paper handling devices, the automatic feed unit for single sheets and a sprocket driver for continuous stationery.

The second printer, the PR 1350, is a desk size bi-directional matrix printer with an "instantaneous optimised printing speed" of 90 cps and is driven by an Intel 8081 chip.

The printing element is a 7 x 7 needle matrix which caters for the standard 96 character ISO set as well as the 128 Katakana (UK) set.

An adjustable sprocket feed device is standard, says Olivetti, and the PR 1350 can also be supplied with manual front feed or pin feed devices for paper handling.

The third machine, the PR 1370, is similar to the PR 1350 but can print at speeds of 10, 12 or 16 characters per inch, says Olivetti, adding that it is possible to print up to 220 characters per line with up to six different character fonts.

The firm quotes an optimal printing speed of up to 200 cps with horizontal and vertical tabulation speeds of 450 cps and 0.2 milliseconds respectively. The PR 1370 also has a resident diagnostic program to identify machine faults down to chip level.

British Olivetti Ltd (CW), 30 Berkeley Square, London, W1X 6AH. Tel: 01-629 8807.

# 80 Mbyte disc controller for Intel kit

XYLOGICS has launched the Model 410 Multibus cartridge disc controller for the Intel microprocessor, bringing disc capacity of up to 80 megabytes to Intel-based micro systems.

The Model 410 is the first of a family of Xylogics controllers supporting large capacity discs for Intel-based systems, says the firm. The controller, which consists of a single Multibus compatible board, supports the 8-bit Intel 8080 and 8085 processors and the 16-bit 8086 processor; it also supports the 8086 20-bit address bus as derived from a 16-bit address combined with a 16-bit segment register, says Xylogics.

The Model 410 provides up to 80 megabytes of online storage for any Multibus-based system. The single board unit can control up to four drives of the Diablo 44B compatible cartridge family including Pertec, Diablo, CDC and Caelus.

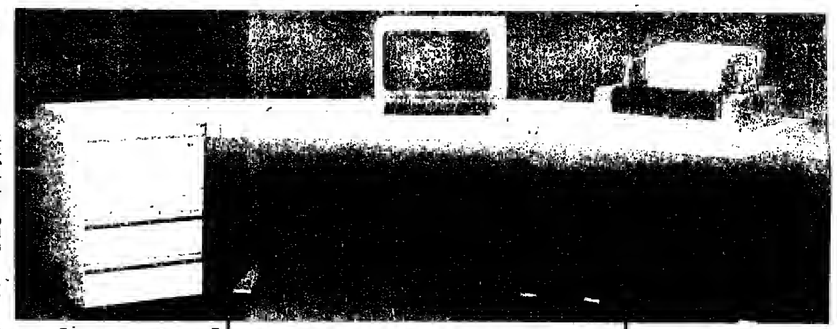
Each drive has up to 20 megabytes capacity, says Xylogics, who add that additional drives can be attached via a daisy chain cable to the first drive.

The firm says that the Model 410 employs bit slice technology, and has built-in diagnostics which verify controller operations prior to first access.

It uses a channel control technique which allows concurrent processor and controller operation and command chaining without operating system intervention between commands.

One-off prices start at £1,000 with OEM discounts available.

Xylogics International Ltd (CW), Lynton House, Mill Lane, Gerrards Cross, SL9 8AY, Tel: 02813 88287.



# Asynchronous line driver

FIRST of a new family of asynchronous line drivers is Nolton's Model 1171 which is said to be a cost effective solution to the problem of interfacing remote terminals and peripherals to computers.

The Model 1171 is compatible and interchangeable with Model 1121/2D1 which it replaces. The Model 1171 can operate between five and 15 miles, depending upon transmission speeds and the availability of suitable lines.

Nolton Communications Ltd (CW), Fieldings Road, Cheshunt, NE8 9TL. Tel: Waltham Cross (97) 33555.

# 5.4 megabit unformatted data cartridges

UP to 5.4 megabits of unformatted data can be stored on a data cartridge from Hewlett-Packard called the 98200. The tape is 140 feet long, 0.150 inches wide with a recording density of 1,800 bits per inch.

Data transfer is at speeds of up to 90 inches per second, says HP, who add that the cartridges can be used on its Series 0800 desk top computers and 264X series video terminals.

HP says that critical parts are assembled in a clean room and a metal baseplate is used to provide a grounding surface to protect the cartridge from static.

After assembly, each cartridge is certified over its entire tape length. This involves testing by recording and reading back data with a 1,600 bits per second density at a critical threshold level, says HP.

The cartridges are supplied in packs of five, each being individually boxed and shrink wrapped. An unlabelled version, the 98200U is also available, says HP. The price per pack for either type is £50.31.

Hewlett-Packard Ltd (CW), King Street Lane, Winnarah, Wokingham, RD1 5AR.

## Brochure

FROM Jennyn-Mogul Systems comes a brochure giving up-to-date details of the microprocessor development systems it handles.

Jennyn-Mogul Systems Ltd (CW), Vestry Estate, Sevenoaks, Kent. Tel: Sevenoaks (0732) 60144.

**A RANGE of ergonomically designed workstations and furniture for IBM terminals, small business systems, word processors and memory typewriters has been introduced by International Data Automation of Virginia Water, Surrey.**

**The range was developed by Karl Gutmann KG in West Germany and IDA has been appointed distributor for the British isles.**

**The base element for each station is either a vertically adjustable table in which a cut-out and platform is provided to lower the keyboard to a medically recommended height or a multi-function desk in which both the video terminal turntable and the keyboard platform can be altered to the operator's individual preference, says IDA.**

**Our picture shows a workstation designed for an IBM System 34.**

IDA Ltd (CW), 11 Station Parade, Virginia Water, GU25 4AA. Tel: Wentworth (09804) 4944.

# Micro based video terminal for comms nets

A MICRO programmed video terminal designed for multi-drop communications networks that incorporates the Burrough TD830 series displays has been introduced by Delta Data Systems.

Called the Delta 2830, it is compatible with the TD830 series in communications protocol, multiple page operation, forms mode, tabulation, formatting, editing functions and highlighting feature, says Delta.

The keyboard is microprocessor controlled with N key rollover, and contains a separate numeric pad to aid faster input. The screen characters are displayed on a 15-inch high resolution screen with a 7 x 9 dot matrix in P31 green phosphor.

Terminals can be concentrated over long distances and auto-bypass ensures uninterrupted operation of the terminal chain regardless of whether one or more terminals is down, claims Delta.

Delta options include enhanced line monitoring which differentiates between upstream and down-stream line traffic and a print buffer that enables local printing operations without terminal lock-out.

A feature of the Delta 2830 is the incorporation of 1,400 bits of electrically alterable read-only memory (EAROM). This memory can be accessed from the keyboard and can also be used for setting up configuration, address, selecting cursor type and for other software controlled options.

These settings are retained in the EAROM even if the terminal is powered down, claims Delta, who add that the major benefit of the feature is that it obviates the need for potentially troublesome hardware switches.

UK prices start at £1,800.

Delta Data Systems Ltd (CW), Swellowfields, Welwyn Garden City, AL7 1JD. Tel: Welwyn Gerdan City (07073) 33833.

## Anti-static kit

IN an attempt to beat the build-up of static electricity, Electroluba has introduced a range of anti-static, anti-skid protective coating for floors.

The coatings consist of an electrically conductive layer with a chemically resistant epoxy barrier coat, says Electroluba, who add that the coating can be applied to most floors.

Electroluba Ltd (CW), Blakes Road, Wargrava RG10 8AW. Tel: Wergrave (073 522) 3014.

# Silencers for Qume

THE latest additions to Power Equipment's range of silencers are two units designed for Qume's Sprint RO and KSR printers.

The makers claim that noise is lowered to 65 decibels on the receive only model. This results in about 80% reduction in perceived noise and the equivalent figure for the KSR model is 66 decibels (about 80% reduction).

Both models have built-in cooling fans and paper guide inlet and outlet slots.

The Power Equipment Co Ltd (CW), Kingsbury Works, Kingsbury Road, London, NW8 8UU. Tel: 01-205 0033.

## DEC agency

PERIPHERAL specialists, Gaveke Electronics, has added the Digital Equipment DECwriter IV, coded LA 34, to its existing products range.

Gaveke Edelectronics Ltd (CW), RMC House, Vale Farm Road, Woking, GU21 1DW. Tel: 04862 71837.

# Low-cost digital tape transport system

RUSSET Instruments of Richmond, Surrey, has been appointed sole UK agents for a low cost digital tape transport system and read/write system which together provide a package aimed at the low-cost microprocessor peripheral market.

Prime applications are seen in the areas of program loading, data logging and system back-up, says Russet. Both devices were manufactured in the US by Micro Communications.

The read/write system has been designated the magnetic tape wafer and measures about half the size of a conventional cassette but contains up to 50 feet of magnetic tape in a continuous loop representing up to 120,000 bytes of data, claims Russet.

The tape transport comes complete with DC motor and sensors for EOT and BOT which are available in TTL or CMOS bit serial form.

An MPU controlled drive system has been developed which can be supplied to customers requiring OEM electronics, says Russet.

It quotes prices for naked transports from £50 each and £120 for transports plus electronics. Individual magnetic tape wafers are £1.40 for one-off units.

Russet Instruments Ltd (CW), RIL House, Sheen Park, Richmond, TW9 1UN. Tel: 01-940 [illegible]

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Hampshire Constabulary Headquarters, Support Services, West Hill, Winchester, and are to be returned by the 1st February, 1980, to the County Secretary's Department, Hampshire County Council, The Castle, Winchester.

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*Full specifications:*— obtained from the Information Department. The Libyan People's Bureau of the Socialist Libyan Arab Jamahiriya, 5 St. James Square, London, SW1.

Further enquiries from the Water and Soil Department, Secretariat of Agriculture and Land Development, P.O. Box No. 5332, Tripoli Telephone: Tripoli 41492. Telex 20398 MIYN LY.

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**Micros are undoubtedly having an impact. That much is obvious, not only to those of us who rely on computers for our daily bread, but to everybody. Television runs programmes on the mighty micro, advertising hoardings wonder publicly whether we've had our chips yet, toyshops urge us to buy their microbased games for Christmas. But defining the real nature of that impact is another matter altogether . . .**

# Two views of 'revolution'

## by Nicholas Enticknap

CANDIDLY, nobody has yet managed to predict exactly what effects the micro will have. If we take just one aspect, obvious but nonetheless a matter for pressing concern, how will employment be affected? For everybody who thinks that the dole queue will shortly equal the size of the population, there are others who propound with equal conviction the view that employment will substantially increase.

Neither side of this argument has really got to grips with the policies needed to manage the change to a micro-based society, despite the fact that both sides agree that a considerable amount of disruption is inevitable.

The particular impact of the micro on the DPM is similarly the subject of a welter of different opinions. So, the reader might ask, what is the point of this article? Is it yet another piece of punditry by somebody who likes the sound of his own voice but doesn't have anything useful to say? Or is it, can it be, the answer to a prayer, a blueprint for the action the DPM needs to take?

While I hope it's not the first, I don't think it can be the second. What the DPM must do is for him to decide in the light of his own circumstances. What I can do is to provide an assessment of the nature of the impact, and follow it with some suggestions for action, based on what's actually happening.

I'll start at square one by asking what impact the micro is making in general. Many commentators use the word "revolution" to describe it. Revolution is a strong word; it implies not just fundamental change but a great deal of unpleasantness — well, let's not mince words — violence, in the process.

By no means everybody accepts that a revolution is happening. At the BCS microprocessor specialist group conference on the impact of the micro on the DP professional, the contrary position was argued very forcefully and very persuasively by former BCS president Gerry Fisher in a talk addressing precisely this question of the impact of the micro on the DPM.

Fisher observed that he had been a DPM for nearly two decades. In that time the nature of his task, or of his responsibility to the organisation that employed him, had changed not one jot.

That task had been and still was to provide a data processing service to the organisation in the light of that organisation's corporate objectives, of which the most fundamental, he averred, was to make a profit. Seen in that light, the micro is merely another tool to do the job.

That of course is true, as far as it goes; what the argument overlooks, I would suggest, is that the nature of the tools available can change the nature of the job. The invention of the printing press, for example, made a drastic change to the nature of book production; the monks in their scriptorium were rapidly superseded by organisations we would now describe as publishers.

This point, in our current context, was well made by the speaker who followed Gerry Fisher at the same conference, Alex Hannam of Vickers. He argued that micros would be incorporated in all kinds of business aids, such as telex, facsimile transmission, clocking-in devices and the like, and that as they did so they would become the computer manager's responsibility.

He even went so far as to say that if the canteen manager were to come to the DPM complaining about the malfunctioning micro in his dishwasher the DPM should treat the appeal for help seriously and do what he could do to help, rather than treat the matter as very much not his pigeon.

The idea of the corporate DPM fixing the dishwasher at first sight rather bizarre; it certainly suggests as much of a distinction between the DPM now and in the future as between the publisher and the cloistered monk in the scriptorium. Recognising this, Hannam suggested that the title be changed to reflect the different nature of the job; his preferred new title was business service manager.

These are two strongly contrasting views of the same phenomenon by two observers

Gerry Fisher . . . "the micro is merely another tool to do the job"

very similar positions. Is the micro a tool radically going to change the nature of the job, or will it have only a marginal impact? The answer that question we must take a closer look at the micro itself, not in terms of its technical specifications but in terms of its essential nature.

Is the analogy between the quill pen and the printing press a fair one, for example? I for myself that that is too simple. Everybody will have their own view; the one I find most compelling argues that the micro is to computing what the electric motor was to the Industrial revolution.

Consider the steam engine. Society of the 19th Century, compare it with life today. Can you imagine, for example, a steam-engine driven cassette recorder? Or vacuum cleaner? Or fridge?

It's a good analogy, for the micro, like the electric motor, is at the same time both an innovation of fundamental importance in itself and part of a large scale development.

If we accept the analogy, then it is clear that the problem for the DPM is twofold: not only is the fact that there is a new tool which offers a more efficient method of doing some of the things he is already doing, or taking advantage of the completely new opportunities that have arisen. The second part of this article will develop this line of thought.


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**REPORT ON STANDARDS**

**Brian Meek discusses some of the subjects discussed at Turin**

# The long-term significance of Fortran update

**BRIAN MEEK reports on the progress of Ansi's X3J3 committee which is considering ravisions to the Fortran 77 standard. Maek, who is director of the computer unit at London University's Quean Elizabeth College, believes that the core plus modules project could ba very significant for programmars in the future.**

BY now, many Fortran programmers will have heard of the core plus modules project, but may well be uncleer what it means or how it will affect them. Since the vast majority of them are not yet working even with Fortran 77, it is likely that they will not be affected for some years.

However, in the long term it could make a significant difference to them.

At a recent meeting of the International Standards Organisation sub-committee on programming languages in Turin the International Fortran group met for two full days and discussed a wide variety of topics, but since the core plus modules concept is at the heart of the project, most of this article will be concerned with giving my understanding of the American National Standards Institute's committee X3J3's current thinking about it.

Before discussing the concept itself, let us consider why it is necessary as "why can't they leave it alone?" is a common plea. In fact, leaving it alone is almost the only option X3J3 does not have.

There is tremendous pressure to add features helpful for certain applications such as real time. For example a BIT data type was strongly urged for Fortran 77.

People needing to use Fortran but who have experienced the advantages of the far superior control and data structure facilities in languages like Pascal and Algol 68 agitate for such features to be added to "drag Fortran kicking and screaming into the 1980s" as it is sometimes sarcastically called.

People building or wishing to use array processors want explicit array and parallel processing features.

If X3J3 were to set its collective face against such developments, all that would happen is that non-standard extensions in such directions would proliferate.

This happened with the first Fortran standard and such extensions would implement the same functionality in different and mutually incompatible ways.

This can already be seen in the different kinds of "structured Fortran" already provided by "extended" compilers or by preprocessors.

And, if even this were not sufficient reason, X3J3 has been directed by its parent committee, X3, to meet a Codasyl requirement for database facilities in the next revision.

On the other hand, the committee is conscious of the enormous investment represented by existing programs and packages, and of the awful warning, in the shape of PL/1, of what happens when every imaginable facility is added to a language.

How could the committee cope simultaneously with the demands to add facilities to Fortran, to modernise it and make it more "regular" (i.e. orthogonal); to keep it compact and implementable on small machines; to maintain continuity with the past; and finally, to retain the Fortran virtues of being easy to learn and write and efficient in compilation and execution?

The answer it came up with was "core plus modules".

The idea is that one starts with a "core" of essential features of the kind expected by almost all programs. These include input/output, essential data types and control structures.

This would be a Fortran stripped down to the bare essentials, probably no larger than, but possibly more powerful than, the present Fortran 77 subset.

This would be a viable language in its own right, suitable for the expression of basic algorithms, for initial training and student exercises.

To this could be added a variety of modules which might be functional modules to supplement the expressive power of the core, or applications modules to provide particular facilities such as real time, graphics and database.

Thus the whole language might be large, but any user or implementor could limit the size of the language for himself by selecting only those modules he needed to add to the core.

The Turin meeting heard a presentation by Win Burke, the X3J3 member who is chairman of the group looking into this particular aspect, on the architecture of the new Fortran and the criteria for selection of items for the core.

Space precludes a discussion of the present view of these criteria, except to say that the intention is to make the core language simple, efficient and regular, with as little internal redundancy as possible, and recognisably Fortran despite the fact that it will almost certainly contain features (especially for looping) which do not appear in standard Fortran now, and others (perhaps, for example, arithmetic IF) which have been in the language from the outset.

To cope with the need to preserve the investment in existing programs written in earlier versions of the language, the first module to add to the core C is the "obsolete module" O.

This contains features of Fortran past and present which in the opinion of the committee have been superseded by better features with equivalent functionality.

Candidates for the O module also, of course, have to meet certain criteria. The intention is that C+O would also constitute a complete language in itself.

What is not now clear is the relationship of C+O to Fortran 77. At last year's International group meeting in London and the BCS Fortran Forum, it seemed that there would be a Fortran 77 module, F, containing non-obsolete Fortran 77 not in the core, so that C+O+F would contain Fortran 77 as a subset.

It was also implied that there would be other functionality extension modules containing new features.

This seems now to have been discarded, at least for the time being, in favour of a single extension module E. C+E would constitute a complete language, just as C+O would.

However, it is not clear now whether C+O+E would constitute a complete language, or what its relation would be to Fortran 77 if it were. Possibly it is now decided that there are no non-obsolete features of Fortran 77 which would not be in the core. Whatever the relationship to Fortran 77, it is an important point whether C+O+E would be a viable language. If it is, it implies that all extensions in E have to be consistent with the obsolete features in O.

This places corresponding constraints on the syntax, especially considering the limited character set of Fortran.

It seems inevitable that there will be some increase in the character set, but the committee is anxious to keep this to a minimum.

It may be significant that X3J3 has before it, but has deferred consideration of, a proposal to make blanks significant. Either that, or a large increase in the character set, would tend to make the new Fortran less Fortran-like.

It seems to me that a simple and more Fortran-like solution is to say that any modules (the O module and any extension modules attached directly to the core) should be mutually independent, thus freeing us from the need to ensure across-the-board consistency.

Since programmers are used to constructs being context-dependent (for example, the same name meaning different things in different program units) this need not cause too much trouble.

There would need to be special facilities to cope with two situations. One is when a programmer needs to use two independent modules in the same program unit.

This could be done by means of a non-executable statement telling the compiler what module to assume until further notice, the default being core only.

This would mean that all Fortran 77 programs would need to be recompiled to use a core-plus-modules compiler, but that is an occupational hazard anyway even with a new version of the same compiler.

More difficult is the case where a programmer is trying to combine features of two modules in the same statement. It could perhaps be overcome by means of some prefix or suffix notation (which in practice would be rarely used if the "select module" feature were also provided) but would be better done by designing the modules in such a way that this need not occur.

The core plus modules concept is essentially a hierarchical one, and there is no reason why further modules should not be attached to C+E or C+O, as well as just to the core C.

The committee's intention is that no modules should attach to C+O for obvious reasons, but it envisages applications modules to be attached to C+E, rather than just the core, although that is not ruled out.

At present Burke's group is particularly concentrating on the design of the interface between C+E or C and the applications modules.

## Scarecrow will not be first draft

**THE X3J3 committee is very conscious that it is now a design committee rather than (or as well as) a standards committee, and that the proposed core plus modules architecture is not one which, as far as is known, has been used for Fortran to date.**

**For this reason, one of its immediate intentions is to produce a "scarecrow" version of the language. This will be a rough model, using for the core and modules any material that happens to be to hand, simply to see if the core plus modules architecture can be made to work and that there are no hidden unforeseen snags.**

**Once the scarecrow has done its work in proving the architecture, it will be discarded, like the aircraft designer's "mock-up". The scarecrow is not in any way to be regarded as a first draft, however rough, of the actual revised Fortran.**

## Simple way to new control structures

THOUGH core plus modules and associated discussion of the requirements of application areas like real time and database did tend to dominate the Turin meeting, other matters were discussed.

Jack Humar of Canada gave a paper on control structures while Jeanne Martin of the Lawrence Livermore Laboratory presented a proposal to include macro facilities and additional compilation directives into the language, both stimulating lively discussion.

Macros would provide a simple method for introducing new control structures, with the danger for portability and readability that everyone would define their own, slightly differently.

Conditional compilation could aid portability by, for exemple, allowing variables to be REAL or DOUBLE PRECISION depending on the word length of the machine.

Mecros were criticised on the grounds that they did nothing that preprocessors or external macro editors did not.

But it was argued that the facility does need to be within the language since otherwise only the expanded code, which may be difficult to read and maintain, can be transported.

Array handling was also discussed, with Humar claiming that constructs like:

A=A/A(I,J)

must for simplicity be regarded as representing implied DO loops (meaning that at some point A(I,J) changes itself to 1, and all subsequent array elements are unchanged).

This was strongly attacked on the grounds that with array processors coming in we must start "thinking parallel" and must add parallel features to the language, so that sequential constructs like the DO loop are used when sequencing is needed and parallel constructs used when this is more efficient or, as in the above example, a requirement of the operation.

In the general discussion, doubts were expressed in several places, particularly from the UK and Canada, about the committee moving "too far, too fast".

The committee may fail; but the intellectual and professional ability of those of its members I have met leads me to believe that, if so, the failure will not be in the technical quality of their work but in their ability to convince a suspicious and set-in-its-ways Fortran community that they have done the right thing. And, fail or succeed, it will have been a brave attempt.

## 'Core plus modules' approach could lead to greater flexibility

WHAT the committee has embarked upon is an attempt to give to Fortran the kind of structure and architectural unit which it has never had, and a framework for future development.

One of the most interesting things that appeared at this meeting was that core plus modules is regarded as a dynamic rather than a static structure.

It is envisaged that features in applications modules which prove to be useful in a wider context can in later revisions migrate to the extension module, or even, in time, to the core.

Successful experimental features added to the extension module will stay from revision to revision, or possibly move to the core, while unsuccessful ones will be transferred to the obsolete module. (There are obvious candidates for the obsolete module among the innovations of Fortran 77.)

It is even possible that features previously declared obsolete might be reprieved though it is expected that the module will gradually grow, with nothing disappearing altogether unless no voice is raised against its deletion.

As for the core, it is intended that this should remain as stable as possible from revision to revision, and change only slowly, if at all.

Core plus modules is not just an architecture for Fortran 8X, it is a plan to enable Fortran to meet changing needs over a much longer period.

The decision to try to take Fortran in this direction was a courageous one, and the committee should be admired for it — and for its subsequent application to the task — whether or not one is sympathetic to the aim.

After all, it is an ultimately thankless task since, whatever form the new Fortran takes, it is bound to be wrong for somebody.

Enthusiasts for reform will probably think that too few changes have occurred; X3J3 has always to take a conservative line, as its chairman, Jeanne Adams, points out.

Yet there are many Fortran programmers — the kind who fear the removal of bugs from their compiler in case the new version discovers errors in their programs which the old one did not pick up — for whom any change at all is "too far, too fast".


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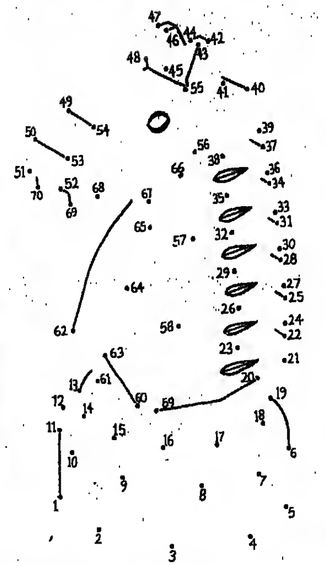

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**REAL-TIME DEVELOPMENT**

**BYTE COBOL—TRAIN AS ANALYST/PROGRAMMERS**
**BYTE ASSEMBLER—TRAIN IN SOFTWARE SUPPORT**

**N. LONDON** **to £6500**

This small but sophisticated installation is expanding in on-line/real-time developments and distributed processing is planned. Local and remote terminals are currently on-line to the mainframe computer and a larger terminal network is being designed.

COBOL PROGRAMMERS and ANALYST/PROGRAMMERS are required to assist in the development of Production Planning/Control Projects and there is good scope for advancement.

ASSEMBLER PROGRAMMERS are required to become involved in Software Support for the installation.

**Telephone Peter Barson on 01-839 6087 for further information.**
**BARSON, TAYLOR & WARD, 107 Jermyn Street, London SW1Y 6EE**

BARSON TAYLOR & WARD

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**UNIVERSITY OF BIRMINGHAM**

**MICROPROCESSOR SYSTEMS LABORATORY**

Applications are invited for posts within the University's newly established Microprocessor Systems Laboratory. Four posts are available within the Grade of Computer Officer and two posts in the Grade of Hardware Engineer. For the Computer Officer posts, preference will be given to applicants who are professionally qualified, have relevant experience and are familiar with the software and hardware of a range of microprocessor systems. An appointment at the level of Senior Computer Officer would be considered for a suitable candidate.
Applicants for the Hardware Engineer posts should have qualifications and experience in the area of electronics and preferably some experience with microprocessors.
Salary scales:
Senior Computer Officer £7980-£9891 plus superannuation (£8427-£10484 from 1.4.80).
Computer Officer £4183-£6991 — £6273 plus superannuation (£4402-£7415 — £6789 from 1.4.80).
Hardware Engineer £4183-£6991 plus superannuation (£4402-£7410 from 1.4.80).
Further particulars are available from Mr. R. Rushway, Computer Centre, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, to whom applications (2 copies) including a full curriculum vitae and naming three referees should be sent by 21st February, 1980.

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**UNIVERSITY OF KENT AT CANTERBURY**

**COMPUTING LABORATORY**

**SHIFT LEADER**

We need an experienced Computer Operator to lead a three-person alternating shift operating the Laboratory's ICL 2960.

Salary scale £3,867-£4,512 + £4.13 for each evening shift worked.

Application forms and further particulars may be obtained from H. R. Clayton, Senior Assistant Registrar, The Registry, The University, Canterbury, Kent, CT2 7NZ (Tel: Cant. 66822, Ext. 263), quoting reference M80/2, to whom completed applications should be returned not later than 15 February, 1980.

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**GRAVESHAM BOROUGH COUNCIL**

**COMPUTER MANAGER**

Up to £8,645 p.a. — comparability pay award pending from 1st January, 1980.
We are looking for a Computer Professional with five years' experience in O.P., including some at Supervisory level.
Duties include some systems analysis work, management of the Computer Section and liaison with users of new applications. The successful candidate will be a member of the Borough Treasurer's Management Team.
The installation is an ICL2903 with 32K words main storage, mag. tapes and ED880 disc drives. Input via DDE key system.
Experience of this type of equipment would be an advantage.
Benefits include 27 days' leave, contributory pension scheme, assistance with relocation expenses and temporary housing where necessary. The post carries a lump sum essential user car allowance of £633 included in the above salary.
Gravesham bordering the Thames embraces both industrial and rural areas and both London and the coast are within easy reach.

For a job description and application form, write to: The Personnel Officer, Civic Centre, Gravesend, Kent, or telephone Gravesend (0474) 64422 Ext. 285. For further information ring Brian Dodds on Ext. 230.
Closing date of completed applications 15th February, 1980.

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**Analyst/Programmers**

**London W1** **c. £8000 +Benefits**

Our client, a leading manufacturer in the fashion industry, is seeking to strengthen its DP team by two additional analyst/programmers. The installation is an IBM 370 running under DOS/VS with database and data communications techniques being used extensively.
The successful candidates must have had a minimum of three years programming experience, one year of which must be in COBOL. They must also have participated in the design of at least one system and be able to communicate effectively both orally and in writing. The ability to work with a minimum of supervision and to pursue problems through to a successful conclusion is essential.
These positions present an excellent opportunity for gaining in-depth DB/DC experience together with considerable scope for career progression. Benefits include season ticket loans, subsidised restaurant and company products at substantial discounts.
If you feel you can match these requirements, telephone or write in confidence to RON BURRELL quoting ref. 3078.

Lloyd Chapman Associates
123, New Bond Street, London W1Y 0HR 01-4081670

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**ICL** (or other 3rd Generation Experience)

**ANALYSTS & PROGRAMMERS**

Learn the IBM 370 during a 12 – 18 month visit to

**AMERICA** with

SOFTWARE DESIGN ASSOCIATES (SDA)

An 11 year old expanding Computer Services Organisation specialising in both Computer Consulting and Computer Software Products (INTERCOMM, MINICOMM, SCORE, DIMENSION 5).

Experience on any 3rd generation computer acceptable (ICL etc.). We will train you on 370!

- Return air fare and relocation paid
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- Benefits include medical/dental and life insurance
- Option to remain with SDA on return to UK

Expenses paid local interviews:- Glasgow February 11th, Manchester February 12th, London February 13th – 14th

Send resumé immediately (including phone) or phone (reverse charges accepted) beginning Thursday, February 7th

L. Levine or M. Starr, Royal Lancaster Hotel, London W2 2TY 01-262 6737

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**MICRO CONSULTANTS GROUP OF COMPANIES**

**SENIOR PROGRAMMERS**

**(RSX11M or RT-11)**

**Newbury, Berkshire**

The Organisation: Micro Consultants Limited and Questel Limited; world leaders in the design and manufacture of a wide range of specialist micro electronic equipment; U.K. owned, medium sized, highly innovative and very successful.

The Opportunity: To join an established team of highly competent Software Engineers developing a wide range of mini computer Software for industrial data acquisition and control work.

The Person: You are likely to be a graduate, but this should not preclude anyone with a proven track record from applying.
You should have practical knowledge of application or systems work on mini computers; experience with DEC RSX11-M or RT-11 would be an advantage but is not essential.

Salaries are excellent, and the work will be hectic, demanding but very rewarding. Assistance with relocation will be given where applicable. Please apply to:

The Group Personnel Off
The Micro Consultants Group of Companies
5 West Mills, Newbury, Berkshire
Tel: Newbury (0635) 46222, Ext. 205

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JBA

**£7,000 -£22,000**

**SYSTEMS ANALYSTS AND CONSULTANTS**

**Remuneration depends on location and experience**

**LONDON UK ABROAD**

**For further details contact:**

**Lynn Bell,**
**SCICON Consultancy International Limited,**
**20 Savile Row, London W1X 1AE.**
**Tel: 01-439 9761**

**or**

**Margaret Stevens,**
**JAMES BAKER ASSOCIATES,**
**International Personnel Consultants,**
**32 Savile Row, London W1X 1AG.**
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# COME INTO THE 1980's WITH A LARGE MULTINATIONAL COMPANY

DILOG'S CLIENT is developing a major international distributed-processing system, based on substantial IBM and DEC equipment sited in the U.K. and Western Europe. A number of Systems Analyst and Senior Programmer positions exist within the project teams, as shown below. Our client is more interested in the quality and depth of your experience — the projects are large, and allow flexibility of initial placement within the teams.

BENEFITS are substantial: Excellent pension scheme, free life assurance, 4-5 weeks holiday, subsidised licensed restaurant and flexible working hours.

Management training is carried out as part of Company policy, and some opportunities for European travel exist.

LOCATION MIDDLESEX (10 seconds from Underground)

Apply now by telephoning Richard Morley on 01-638 0036 (24 hour answering service) or send a brief C.V. to: DILOG LIMITED, Ref: C180
Throgmorton House, 15 Copthall Avenue, London EC2M 5TP

## SYSTEMS ANALYSTS

Experienced analysts with technical awareness are required for both IBM and DEC-based applications. Large scale project exposure an advantage.

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## SENIOR COBOL PROGRAMMERS IBM OS/VS

Structured programming experience (especially JSP) is desireble. ROSCOE, PANVALET and JSP-COBOL are usad for davelopment.

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## SENIOR BASIC PROGRAMMERS DEC RSTS-E

Good commercial experience is sought, with exposure to BASIC-2

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## IBM OS/VS JCL WRITER

Experience must be current. You are likely to have an operations background. Subsaquant programming work is e possibility.

**£5300**

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A COMPUTER WEEKLY HANDBOOK

# BASIC FILE DESIGN

BY OWEN HANSON

This book provides a brief but euthoritative review of the most frequently used file organisation techniques, and of related subjects such as data security and software aids.

The file designer is shown how to choose between the available techniques on the basis of known or forecast information rather than rule-of-thumb, and methods of ensuring that the correct choice has been made are given.

New work carried out by the systems analysis division of the City University Business School, London, is linked with previously published information to provide methods of optimising the performance of sequential, direct and indexed files. Marked improvements can be achieved, particulerly with direct files, which are worthy of wider use than at present.

Students of data processing, lecturers and practitioners should all find the book invaluebla, particularly because it provides a great deal of information and many illustrations in a very compact format.

**£1.50 including postage. Rates for bulk orders on request**

*Available from*

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# COMMUNICATIONS SYSTEMS PROGRAMMERS

to £7K (Comparability Award Pending)

## The Opportunity of a Lifetime

Do you want the opportunity to play a central role in developing real-time data base applications that would place the City of Kingston upon Hull at the forefront of other Councils in the U.K.?

The Council have embarked upon a major development programme involving implementation of a highly advanced and fully comprehensive On-Line Housing Management System based on ICL 1900 Series Processor operating uader COMMUNICATIONS MANAGER. The system will provide unrivalled service to people in housing need and meet all the needs imperative to effective housing management services.

Our current equipment is an ICL 1903T (128K) with 8 x EDS 60S slo., and communications hardware and is likely to be enhanced in the near future. Our most important growth area is in the communications field and we utilise the latest technology and techniques to meet the challenges and demands of the future. To do this we require top line programmers to join us to further our objectives. Consequently you will develop your own expertise and knowledge. The programmers will form the development team and find a first-rate setting that will give them direct user contact in which to develop their abilities to the full. The team would be seconded to the Housing Department to develop and implement the on-line Housing Management System (O.L.H.M.S.) under the direct supervision of the Communications Systems Specialist — the Assistant Director of Housing.

If you are an experienced programmer with a proven track record gained in ICL Communications Software with a sound command of COBOL, then we can offer you a challenging career with excellent opportunities for advancement.

In appropriate cases the cost of removal plus other generous relocation expenses will be paid and temporary housing accommodation may be available. We have two vacancies: Post Nos: TC 249 PO1 (1-5) and TC 251 (T1-SO1).

Application forms returnable by 25th February 1980 and further information may be obtained from The Chief Personnel Officer, Municipal Offices, George Street, Hull. (0482 - 222163)
OR
to get the full facts, contact Mrinal Ghosh on 0482 - 223111 (Ext. 2506)

City of Kingston upon Hull

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One of our clients,

**GOULD COMPUTER SYSTEMS LIMITED,**

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## PROGRAMMER/ANALYSTS

Who are GOULD COMPUTER SYSTEMS LIMITED?

They are successful, professional and hardworking.
They are well paid.
They have the continuous challenge of new problems.
They have the excitement of a fast developing company.
THEIR STANDARDS ARE HIGH

To join them you need aubatantial experience in programming and/or systems analysis.
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Full time: Salary package negotiable to £8,000. Twice yearly salary reviews. Four weeks holiday increasing with service. Paid overtime, travelling expenses.

Freelance: Competitive rates.

★ Incentive payments at the beginning of contracts ★
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Exact terms depending on the nature of the contract

Project Recruitment Limited — Contact PETER KEAY

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# Real-Time Mini & Micro

Are you currently involved in Message Switching, Communications, Military Systems, Modelling or Simulation? If you can offer sound experience in any of those fields, plus a hardware background encompassing either PDP11, Data General, Intel 8080, Zilog Z80, or M6800, with knowledge of Assembler and at least one high-level language (eg CORAL 66, Pascal or Fortran), you should be ideally suited for a position with this leading Systems and Software House. Based in Central Southern England, our Client has several UK offices, so whether your choice of location is North or South we are sure they will be able to accommodate you. Superb career opportunities and promotion prospects are offered to bright and ambitious Senior Analysts and Progrsmmers, Project and Team Leaders and Systems Designers, who will be able to grow with the Company, providing its future management and top level technical specialists. Whilst a degree in Computer Science or equivalent would be advantageous, emphasis will be placed firmly on depth of experience and potential. A full benefits package is offered plus a very attractive salary.

**£6.5-10.5K**

## North Sussex

A major redevelopment of the computer facilities run by this International Manufacturing Organisation has created openings for a Systems Analyst (2-3yrs experience), a Chief Programmer (1-2yrs man management experience, COBOL, ICL 1900 preferred) and several more Junior Programmers (2yrs experience, COBOL and business BASIC). Excellent benefits including car scheme, flexiltme etc. **£6.6—8K + car scheme**

## Sales Manager

Young and ambitious Sales Executive required by this dynamic, London-based Software House. Experience of selling hardware is essential, previous involvement with financial and production control systems packages an additional advantage. Responsibilities will be many and varied, but the rewards are excellent. **c.£16K + car**

## Mainframe COBOL

### UK and European Opportunities

One of the acknowledged market leaders in high-level systems and software development is entering a new expansion phase creating exciting opportunities in the UK and at various European centres. A challenging opportunity now arises for COBOL Programmers with 2 or more years experience on any major manufacturers' mainframes to join one of several project teams engaged in a wide variety of commercial and financial on-line and batch applications.

You will be expected to have a sound knowledge of your respective operating system, and every opportunity will be available to enhance your present skills and to make a valuable contribution to the successful International Group. Promotion is mainly from within and therefore a well defined career path into management and project leadership positions is established. Our Client is reputed to be amongst the highest remunerators in the industry in addition to which they provide excellent pension, life assurance and equity participation schemes, frequent cost-of-living reviews, "out-of-pocket" expenses and, above all, a choice of motivating projects to work on. Interviews will be held during the first three weeks of February and firm offers will be made without any of those usual annoying delays! Expect to talk in the range:

**£6.5-8.5K (UK), £13.5-16K (Europe)**

## Design Manager

A unique opportunity to combine your in-depth technical expertise with management responsibilities is offered by this internationally renowned supplier of computer-based Process Control and Automation Systems at their Hertfordshire headquarters. As Design Manager, reporting at board level, you will be responsible for a team of technical specialists developing system software such as Compilers, Operating Systems, Linkers, Editors and Assemblers on DEC hardware. You will be influencing the future success of the Company by identifying new development areas, and producing new software packages which will ensure that our Clients maintain their market leadership in the process control systems field. It is unlikely that candidates with less than 6 years experience in software development will be qualified for this challenging and demanding role. The benefits offered are substantial, including free life assurance, pension schemes, flexitime and generous relocation assistance where necessary.

**£9.5-11K**

## Sales Support

Consultancy posts with this major UK Bureau are currently being offered to DP professionals with a broad commercial background, to support sales of MVS services. Analysis and proposal writing involved, City base. **c.£8.5 + car**

## Holland

Systems Designers and Technicians required for a Data Communications System, background should include computer networks based on Packet Switching. Machine experience on PDP's or Philips minis. **to £15K**

## Eng. Support

Product Engineer with some hardware experience in electro-mechanical systems and micros required to set up Engineering Support Function for our North London Client's prestigious products. **£8K + car**

MATRIX

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01 373 3063

## ARE YOU TOP OF THE LEAGUE? WE ALMOST ARE!

IMPC have been retained by the largest manufacturer of interactive business systems in Britain and who currently lie second in the British Computer Manufacturer stakes—

### BUT NOT FOR LONG

Programmers, Analysts and Consultants are currently needed to work on the expansion of their Applications Product Development Program — aimed at producing high quality Software packages for specific industries including finance, the automotive industry, retail distribution and manufacturing.

You need preferably, a knowledge of DEC hardware, RSTS and BASIC + but relevant experience in other interactive business systems will be considered.

### YORKSHIRE

PROGRAMMERS ANALYSTS CONSULTANTS

£5000 £6000 £7000 £8000 £9000 £10000

CONVINCE US OF YOUR WORTH

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Benefits include:
- Company Bonus
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ring 061-236 7026 quoting BP10 for a speedy interview

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The Company are also seeking Top Class Salesmen.

## AREA SALES MANAGER

WITH A SUCCESSFUL AND COMPLETE PRODUCT RANGE OUR CLIENT IS THE MARKET LEADER IN BATCH AND ON-LINE APPLICATIONS, WITH FIRST-CLASS SUPPORT AND PROFESSIONAL TRAINING (IN-HOUSE AND EXTERNAL) BIRMINGHAM BASED, THEY ARE BACKED BY A MULTI-MILLION POUND ORGANISATION, PROVIDING DIVERSE CAREER DEVELOPMENT.

THERE IS NO LIMIT TO *YOUR* OPPORTUNITY, WITH A SELECT TEAM.

If you have three or more years' experience in computing together with a sound applications knowledge, especially in accounting systems, and the ability to provide business solutions to large medium companies at Director level, then a vigorous market is open to you.

Ref. No. JB 12

**c£15,000 + CAR**

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DIVERSIFIED, MULTI-NATIONAL COMPANY AND MAJOR COMPUTER MANUFACTURER REQUIRE SALES EXECUTIVES TO SELL A RANGE OF MEDIUM SCALE COMPUTER SYSTEMS IN SCIENTIFIC/ACADEMIC/COMMERCIAL MARKETS WELL-ESTABLISHED IN THE NORTH, WITH A SOUND CUSTOMER BASE. THE COMPANY IS A PROFITABLE INTERNATIONAL GROWTH ORGANISATION OFFERING CAREER DEVELOPMENT AND SECURITY FOR THE 80's.

JOIN A SUCCESSFUL TEAM, selling high performance competitive reliable products — proven over a decade — it decades *YOUR* opportunity for success.

If you have a proven track record in D.P. sales, together with a technical commercial background, then act quickly and *this* prospect!!!

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**c £16,000 + CAR**

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**COMPUTER MANUFACTURER**

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ONE OF THE MAJOR SERVICE ORGANISATIONS IN THE U.K. AND PART OF ONE OF THE COUNTRY'S LARGEST PRINTING COMPANIES. OUR CLIENT HAS THE BACKING AND RESOURCES TO CONTINUE AT THE FOREFRONT OF DEVELOPMENTS THROUGH THE EIGHTIES — AND BEYOND — FORGET CITY COMMUTING PROBLEMS — EASY AT ACCESS AREA — *THE* OPPORTUNITY IN A GROWTH ENVIRONMENT WITH DIVERSE CAREER DEVELOPMENT.

If you have that necessary track record in business/office equipment/bureaux; experience of working at Director level in a variety of concerns; plus that vital business expertise, you can be going a great deal further than you think.

Additional candidates with enthusiastic ability in a pre-sales environment should also apply.

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**O/Q c£13,000 + CAR**

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**ESTABLISHED BUREAU**

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**£16,000 + COMPANY CAR**

Our Client has experienced rapid growth [illegible] company now

They require an experienced Mainframe or Minis Salesman in his thirties to head the venture, the position will initially be based in Manchester.

THIS MUST BE THE OPPORTUNITY FOR YOU

**FOR FURTHER DETAILS TELEPHONE 061-236 7026. REF. JG15**

**061 236 7026**

TELEPHONE FOR COMMISSION AND INTERVIEW

**INSIGHT MARKETING & PERSONNEL CONSULTANTS**

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Interviews can be held in Manchester, Leeds, Sheffield, Birmingham, Worcester

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*Specialists since 1971 in UK and International computer appointments. We have many other jobs on our files and offer a career counselling service to computer professionals*

## sems

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Our clients "Société Européene de Mini-Informetique et de Systémes" is expending its operation in the UK market. A member of THOMSON-CSF, one of the world's leedere in electronice, SEMS ie currently merketing worldwide e renge of MINI Computers, including the SOLAR and the MITRA series, offering e wide-ranging involvement in the industriel, ecientific end also businees systeme merkete

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**c £15,000 + Car**

Two positions are open to Seles Executives who will deel with specific areas of SEMS esteblished market, i.e. industriel, commerciel end scientific mini-computer systems. One of the sales executives will be involved with the interactive merket using the recently introduced SEMSIS.

The ideal cendidetes will be established Seles Executives with impeccable seles records who will want to continue working in similer roles assuming key positions in an expending sales force.

Preference will be given to cendidetes with e progremming or engineering background who are experienced technicelly in the field of mini computer syetems epplicetions.

Product treining on SEMS products will be given. The compeny is beged in Felthem. Full conditions of employment will be offered including eome relocetion expenses if applicable. The package negotieted for the first yeer will be on e full eelery besis incorporeting the amount of commissione top Seles Executive would expect to eern.

Ref. 500/CW/Renée Nute

***The positions can be based in London or elsewhere. Initial interviews will stert next week et our premises. Finel client interviews will teke place soon efter in Felthem.***

***Please ring Renée Nute on 01-242 9356 or write to the eddress quoted. If it would be more convenient to telephone in the evening or during the weekend, pleese ring 01-874 6372.***

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Member of Computing Services Association

## ANALYST PROGRAMMERS/ PROGRAMMERS

**Fulham** **up to £8577**

Opportunities exist within the British Gas Headquarter's Computer Services Department, following the recent expansion of the Department, for Analyst Programmers and Programmers to join project teams in the following areas:

**Systems Support**—providing a maintenance and development function for our mainframe computers (ICL 2972 Univac 1100/21).

**Microcomputer Projects**—for a variety of projects involving evaluation and development of micro systems.

**Database**—to specialise in the use of modern high level database languages and techniques.

**Compumetrics**—to work on all aspects of computer performance evaluation using hardware and software aids.

Applicants should have between 1 and 3 years' relevant experience and preferably a degree level qualification.

The department is located at Fulham where a new purpose-built building, to house the department, is currently under construction.

Appointments will be made within the range £5745-£8577 according to qualifications and experience. Salaries quoted are inclusive of Inner London Weighting Allowance. In addition there are the benefits normally associated with a large progressive organisation.

**Please write with full details of age, qualifications, experience and current salary, quoting reference EP/784092/CW to the Senior Personnel Officer (London), British Gas, 59 Bryanston Street, London W1A 2AZ. Closing date for applications, 18th February, 1980**

**BRITISH GAS**

Financial Services Department

## Programmer/ Analyst

**£3379-£6708**

Following internal promotion we have a vacancy for PROGRAMMER/ANALYST based in our Computer Section at the Town Centre, Harlow. The Council operates a 48K ICL 2904 with EOS 80 and magnetic tape together with a communications systems comprising of some twenty terminals based upon ICL 7502 and Philips PTS 6000 equipment with plans for further enhancement.

Applicants should possess a minimum of two years' overall computer experience preferably on ICL machines using COBOL.

A flexitime scheme is in operation. Housing may be available, full removal expenses paid, travelling expenses, lodging allowance, legal and relocation expenses available in appropriate cases. Sports and Social Club.

**Application forms and job description are available from the General Manager's Department, Harlow Council, 17 Adams House, The High, Harlow, Essex, CM20 1ED. Telephone Harlow 2982, Ext. 66.**

Closing date: 18th February 1980.

**HARLOW**

## You want Interest? then Invest in Banking

An international group supports its activities at a city based computing centre. Having recently made a significant investment in IBM Database and On-Line equipment, they now seek to increase their Programmer and Analyst complement.

This rationale presents some unique opportunities at a number of levels for people who have between 2 to 4 years experience in a financially orientated environment.

A background, or the desire to gain further experience in RPG II or COBOL, and with DOS/VS, CICS/VS, SPMOL, DLI and IMS are general criteria.

The successful candidates will benefit from training, remuneration and career development schemes second to none.

For immediate consideration, telephone Rex Ashcroft quoting reference 3/79.

Lloyd Chapman Associates

123, New Bond Street, London W1Y 0HR 01-408 1670

## Telecommunications and Product Engineering Manager

Our Bibliographic Services Division provides large scale on-line and batch services to its users, both within the UK and, increasingly, in Europe.

The responsibilities of the Telecommunications and Product Engineering Manager include the planning and establishment of effective telecoms network facilities for these services; and training and advice to users on the selection, installation and use of terminals and other electronic equipment.

Candidates must have a suitable qualification in Electrical and Electronic Engineering and have had formal training in telecoms and GPO DATEL services. Experience in the planning and maintenance of a large scale data communications network is essential, as is the ability to manage staff with a variety of expert skills. Experience in any of the following would be an advantage: DIGICO equipment, teletype terminals, ICL and IBM communications hardware and protocols, Systems Reliability Equipment, GPO DATEL service ordering and approvals, international interface standards.

The post is graded SEO and attracts a salary of £8,130-£9,680, including Inner London weighting. For further details and an application form (which must be returned by 22 February 1980) please phone Celia Woodall on 01-636 1544 ext 518 or 520.

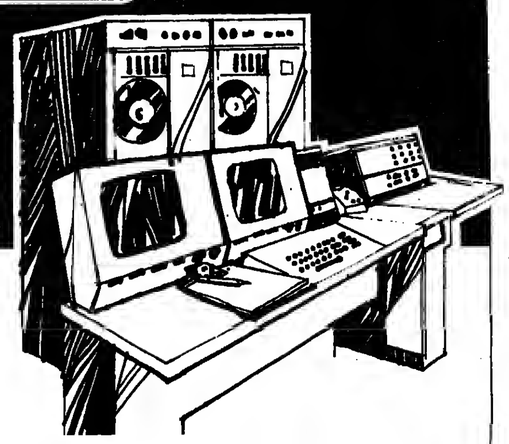
The British Library



## computel

# Senior Sales Executives

## c.£12,750 + car



Located in Berkshire, Computel is one of the largest telecommunications based service bureaux in Europe. It is also one of the fastest growing companies in any sector of the computing industry with an annual rate of growth in excess of 50% per year.

To sustain this growth the company is seeking to recruit several senior sales executives. Ideal applicants will have experience, preferably gained in bureaux services, a record of success and the ability to obtain new business and develop existing accounts.

These are senior positions within the company and it is unlikely that anyone with less than three years successful sales experience will be suitable.

The remuneration package is high with a BASIC SALARY OF £8,500, a company car, and a commission scheme with a guarantee period and no ceiling on earnings.

This is a real opportunity to join one of the most successful computing services companies in the UK. For further information telephone Kevin McCourt or write with brief details quoting reference 3077. All applications will be acknowledged and treated in the strictest confidence.

Lloyd Chapman Associates

123, New Bond Street, London W1Y 0HR 01-499 7761

## MYRIAD

# PROGRAMMING MANAGER

**N.W. OF LONDON** **£11,000 + CAR**

This senior position has recently been created due to the continued expansion of our clients operetions in the U.K. The Programming Manager will direct smell development teems producing e range of technically advanced software products on IBM equipment and will contribute to the design of future systems in addition to identifying improvement potential in existing software.

Candidates for this challenging role should have e strong date processing background end proven experience of supervising programming staff. IBM Assembler knowledge is essential and therefore SYSTEMS PROGRAMMERS, seeking e career advancement, will quelify for this role.

The successful applicant will possess e genuine interest in softwere development, coupled with the drive end personality to manage a fast growing department.

A generous starting salary is further enhanced by a full renge of employee benefits, including full relocation expenses where eppropriete and the spacious new offices heve ample car-parking facilities end are also well serviced by public trensport.

REF S1/3101

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

# JBA

## X25 Implementation

**S.Germany** **Salaries to DM 90,000**

A new communications group is to be established in Germany, by one of Europe's leading Consultancies. To date, the company has specialised in Database/T.P. projects and has scored major successes in the field of innovative and effective design.

*If you have X25 or similar software experience, and would relish the challenge of developing a new European group...* **Contact: Andy Wright**

## Sales Executives

**Leeds Based** **Earning c.£14K+Car**

A well known computer manufacturer is seeking two SALES EXECUTIVES to sell small business systems (h/w and s/w) within the Yorkshire area.

*Applicants should have a professional attitude and successful sales experience in the computing industry.* **Contact: Bev Stevens**

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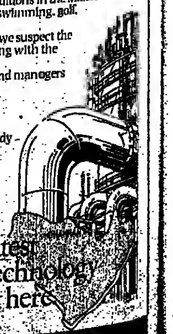


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A new ICL 2904 and on-line systems. This is an excellent opportunity for a person with 2 + years experience in a commercial environment to develop brand new systems.

Contact PETER GILBERT on LEEDS (0532) 444185 (daytime) or on BRADFORD (0274) 834074 (evenings and weekends) for these and any other MIDLANDS vacancies, or write with brief details (no stamp required) to Lorien Computer Services Limited, FREEPOST, Leeds LS7 3YY.

LORIEN COMPUTER SERVICES

Recruitment Consultants
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**OXFORD UNIVERSITY COMPUTING SERVICE**

The Service runs a large ICL 2980 system with extensive communications and graphical equipment. It is currently planning expansion to its interactive facilities and to local and remote network connections. The work is interesting and varied and conditions amenable.

The Service requires the following staff:

**SYSTEMS PROGRAMMERS**
to work in the following areas:
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The salaries for all these posts will be on the Universities' Research Staff scales 1B/1A/1I, £4,153-£9,891 per annum (increasing from April 1, 1980, to £4,402-£10,484 per annum). The initial appointments will be on the scale appropriate to age and experience.

Further details and application forms may be obtained from:
**The Director's Secretary**
**OXFORD UNIVERSITY COMPUTING SERVICE**
**13 Banbury Road**
**Oxford, OX2 6NN**
**Telephone: (0865) 56721**
Closing date for applications: February 29, 1980

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FIAT

## ANALYST/ PROGRAMMER

### BELGIUM

Fiat Auto Belgium, Belgian Importer of the Fiat and Lancia ranges seeks an Analyst/Programmer (male or female) for its Computer Department.

The person should have:
- Five years' experience of Cobol programming under DOS/VS
- The ability to control an IBM 370 DOS/VS system and to manage a project without supervision.
- A sound knowledge of RPG II and experience of CICS/DL/1.
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The Fiat group offers its employees competitive salaries, attractive fringe benefits and numerous opportunities for advancement.

Applications, including a hand-written curriculum vitae should be addressed to:

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**DE FIAT BELGIO**
**39 DREVE DE L'INFANTE**
**1410 WATERLOO**

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**SOFTWARE DESIGN ENGINEER**

Mitel Telecom is an established leader in telecommunications products and manufacturers of the world's finest PBX systems — the Mitel SX200 Superswitch.

We are seeking an energetic and responsible Software Designer, with at least two years experience, who will design and develop specialised microprocessor software for telecommunications equipment.

You will be required to work closely with our engineering team and a knowledge of digital hardware concepts and/or telephony would definitely be an asset.

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**OS/Cobol Programmers**
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Our client requires a Manager to be responsible for the final quality control of all its products and to support the marketing/systems engineering teams as and when necessary. This will involve new product monitoring and initial field testing, mainly in the UK but short duration trips abroad will also be available, particularly in a trouble-shooting capacity.

The newly-formed department liaises world-wide to ensure customer enhancement requests are actioned quickly and efficiently so maintaining their high standard of service. Technical bulletins and departmental standards are also generated by this group.

In-depth DOS/VS experience and a knowledge of systems software packages (e.g. GRASPVS, POWER/VS, EPAT, JARS, FLEET, PANVALET, etc.) are firm requirements and exposure to IBM Assembler will be expected. The personality to communicate with customers at managerial level and to work alongside their technical personnel is of prime importance.

With offices on three continents, the Company is a well-established organisation that can offer several career paths to the successful applicant. Pension and life assurance schemes, coupled with an exceptional disability scheme, add security to a five-figure starting salary. Full relocation expenses are paid in appropriate circumstances.

REF. S.3/3101.

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(3 years + DOS experience)
# and
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(6 months + DOS experience)
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Relocation Assistance Available

We are a major International Organisation with a UK manufacturing plant in South Wales and distribution outlets throughout the world.

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Following a decision to undertake three shift working further vacancies have arisen where, for the Shift Leader post we would expect you to be a competent IBM-DOS operator with experience of JCL correction, IBM utilities and the ability to supervise a small team of operators.

The Computer Operator vacancy represents an excellent opportunity for an individual with 6 months plus experience to join an expanding operations function with a true commitment to the use of advanced hardware.

For a confidential discussion regarding these vacancies, contact our Advising Consultant Andy Carter on 01-935 0671 (24 hour answering service).

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If you are interested in considering a career in recruitment and would like to learn more about these challenging positions and the training available, please telephone to arrange a meeting to discuss the matter in detail.
REF: AW1/3101

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Dyfed County Council

Applications are invited for the following post

TREASURER'S DEPARTMENT

**TEAM LEADER COMPUTER SECTION CTD 109 — Carmarthen**

Grade BO1/2 £5721-£6627 per annum

Applicants for this post should have appropriate training and considerable practical experience.

A proven record of achievement as a COBOL Programmer is essential, together with the knowledge of the George 3 operating system.

A knowledge of payroll and superannuation systems would be an advantage

The Council have at present an ICL 1904S computer, and is considering the possibility of enhancing to a new range. There are communications links to the District Councils within the area

Application forms returnable by 18th FEBRUARY, 1980, are available on receipt of a stamped addressed envelope from The Director of Personnel and Management Services, County Hall, Carmarthen.

CANVASSING DIRECTLY OR INDIRECTLY WILL DISQUALIFY.

UNIVERSITY OF DUNDEE

Applications are invited for a post of

**PROGRAMMER/ SYSTEMS ANALYST**

in Data Processing in the University's central administrative offices in Dundee.

The person appointed will be responsible to the Data Processing Officer and will be involved both in the use and maintenance of existing administrative systems, in certain work for new systems, and in the extension of existing systems from the University's main IBM 370 mainframe to a new mini-computer to be provided for administrative work.

Applicants should have not less than two years' experience of COBOL programming, should be ready for a more hands-on systems analysis work, and should preferably have experience or knowledge of data-bases.

Salary within the scale £4,626 to £8,091 plus superannuation. Starting salary will be fixed according to the qualifications and experience of the successful candidate.

Applications including the names and addresses of three referees should be sent to The Secretary, The University, Dundee DD1 4HN, by 15/2/80. Please quote Reference 537/22/CD 174.

# OPERATE A 3031
## c£5,000

Sentry Insurance Group is the progressive, U.K. subsidiary of a leading international insurance organisation and has its head office and data processing centre in the City of London.

The company wish to recruit additional operations staff for their IBM 3031 working a three-shift system.

Applicants should have 12 months' DOS/VS and CICS experience together with a working knowledge of DOS JCL.

The successful candidates can look forward to a rewarding future with a planned career path.

The company offer a first-class package of benefits which includes four weeks' holiday, subsidised restaurant, pension scheme, and after qualifying period, free BUPA membership, interest free season ticket loans and permanent health insurance.

The company will be relocating to Milton Keynes in 1982, a generous relocation scheme will be available with this move.

***Salary for these positions is circa £5,000 with two salary reviews within the first 12 months.***

***For further details and an application form contact Barrie Cheney at Effectia Gravis, quoting reference number B3688.***

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You will, probably be earning a five-figure salary at present and be looking for a substantial tax-free remuneration package overseas to include free accommodation, transport + medical cover; subsidised dining facilities and paid regular home leaves to the U.K.

Final interviews will be held during February.

For further information or an application form please contact, quoting FG680:

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MALLA MANAGEMENT CONSULTANTS LTD.
1 Devonshire Street, London W1N 1FX
Tel. 01-636 6681. Telex: 266868 MALLA G.

## Sex Discrimination Act

No job advertisement which indicates or can reasonably be understood as indicating an intention to discriminate on grounds of sex (e.g. by inviting applications only from males or only from females) may be accepted unless:

(1) the job is for the purpose of a private household or

(2) it is in a business employing less than six persons or

(3) it is otherwise excepted from the requirements of the Sex Discrimination Act.

A statement must be made at the time the advertisement is placed saying which of the exceptions in the Act is considered to apply.

BRITISH AEROSPACE AIRCRAFT GROUP
MANCHESTER DIVISION

## COMPUTER OPERATIONS

The Operations Department teams of the Manchester Division at present operate an ICL 1906A under G3 and a 2960 on VMEB. The teams are to be increased due to the installation of a further 2960 computer using DME.

The Division has vacancies at its Chadderton site for suitably qualified staff for the following positions:

### SOFTWARE PROGRAMMER/ANALYST

To join our team to help support G3 and VMEB, to implement the DME system and to support our large communication network.

### APPLICATIONS SUPPORT PROGRAMMER/ANALYST

To join a team which is responsible for all scheduled live work on the machines and for providing User liaison.

### COMPUTER OPERATORS

To work a 3 shift 8 day system operating our 1906A, 2960 and System 10 equipment.

Whilst experience is preferred, and education to 'A'ND/Degree is required for programming posts, we are prepared to train suitable candidates of either sex.

Please write or telephone (061-681 2020 Ext. 165) for an application form to:

Jim Hayes, Employment Officer,
British Aerospace Aircraft Group — Manchester Division,
Greengate, Middleton,
Manchester, M24 1SA.

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Department of Computer Services

**SENIOR APPLICATIONS PROGRAMMER**
Post No. 258

**SENIOR SYSTEMS PROGRAMMER**
Post No. 259

AP5 — £2220-£5547

Well qualified, experienced people are required to work on a 512K IBM 370/148 Computer running and extensive time-sharing system and OS/VS1. The work is varied and challenging.

Application forms from the Personnel Officer (Dept. CW), Sheffield City Polytechnic, Hallords House, Fitzalan Square, Sheffield S1 2BB, or, by phoning 20911 ext. 387. Completed forms should be returned by 8th February.

WEST YORKSHIRE METROPOLITAN COUNTY COUNCIL

**PROGRAMMER/ANALYST**

Post Ref: ES 22010

Salary £5,721-£6,627

A Computer Science Graduate is needed to bring Software expertise to the Directorate's Engineering Computer Group. Presently, the Directorate uses about half the power of the County's IBM 370/158 through an extensive telecommunications network.

The Engineering Computer Group has excellent graphics equipment but needs a software expert to support the applications staff. The County is considering a cost-effective change to distributed processing which may introduce two ultra-modern 32-bit megaminis.

Experience with interactive software and graphics is essential; a knowledge of tektronix and calcomp equipment would be helpful.

G. Seddon (Wakefield 67141 Ext. 3527) will answer queries.

Application forms from Room 238, Directorate of Planning, Engineering and Transportation, County Hall, Wakefield to be returned by 29th February, 1980.

# MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

## COMPUTER ENGINEERS & ENGINEERING MANAGERS

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**MANAGEMENT & EXECUTIVE SELECTION**

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Ladybird

## PROGRAMMER

Langley, Berks. to £7,500

We are looking for an experienced Programmer to play a vital role within our team.

Ideally applicants will have 2-3 years' sound programming experience, using both low and high level languages. Experience in I.B.M. hardware would also be useful, but we would like to meet any applicants who feel their ability and potential would interest us.

The post offers a first-class opportunity for real involvement in a small but progressive department. The past two years have seen the introduction of OL-1, CICS and on-line programming languages. If you feel you could make a significant contribution, we would like to hear from you.

For further details please telephone:

Personnel Officer
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## TECHNICAL OFFICER (COMPUTER APPLICATIONS)

**Applied Physics Division**

**MATHEMATICS SECTION**

The successful candidate will join a team in the Mathematics Section whose work covers a range of research areas in addition to providing a mathematical service within CERL. He/she will work closely with Research Officers engaged on a number of problems for which numerical and computation solution plays a large and important role. In addition he/she would contribute to the mathematical and computational service provided by the Section.

Applicants should ideally possess an HNC or equivalent qualification and at least two years experience of computer programming. The duties of the post require ideally a good understanding of mathematics and numerical analysis, together with a knowledge of a range of computer languages and modern programming techniques.

The appointment will be made within a salary range of £5200-£7630.

The Laboratories are situated in a pleasant part of Surrey and offer attractive Conditions of Service, and facilities for the total of 800 Research and Support Staff engaged in a broad spectrum of research into the materials, technologies and plant performance problems of the Central Electricity Generating Board.

Application forms are obtainable from the Head of Personnel Development & Services, Central Electricity Research Laboratories, Kelvin Avenue, Leatherhead, Surrey KT22 7SE or telephone Leatherhead 74488 Ext. 363, quoting reference number RL/1/80/N6. Closing date is: Friday 15th February 1980.

CENTRAL ELECTRICITY RESEARCH LABORATORIES

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**To £7000** (Incl. Shift + Car Allowance)

To land one of our operating/data control teams on a two-shift system. You should have extensive operating and/or data control experience, and the ability to supervise and motivate staff. Bexley has an expanding, progressive installation to which you would make a positive contribution in the control of day-to-day computer operations and teleprocessing facilities. A major expansion of hardware is planned. Currently in use as a 1 megabyte IBM 370/138 using DOS/VS, POWER/VS with an extensive CICS T.P. network and Data Entry by Redifon R300.

For details/forms contact Allen Chambers on 01-303 7777, Ext. 782, or at Data Processing Department, 9 Brampton Road, Bexleyheath, Kent DA7 2EZ.

Closing date: 18 February, 1980.

**Bexley** London Borough

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with a University degree or equivalent computing degree and 5 years or more professional experience for requirements analysis and for the design and implementation of a banking information system.

Applicants must be bilingual French-English.

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**East Anglian Regional Health Authority**
**Computer Division**

## Systems Designer/ Programmer

To work in the Financial Development team on systems to be processed on an ICL 1903T computer and mini/micro computers that will be linked into the 1903T.

Salary Scale: £6837-£8749 per annum.

Applicants should be educated to at least A level standard and be able to demonstrate 2 to 3 years' systems and programming experience. Trainees with little or no experience would be considered but at a lower starting salary.

Application form and job description from the Regional Personnel Officer, Union Lane, Cambridge CB4 1RF (Tel: Cambridge 61213, ext. 325).

Closing date: 18 February, 1980.



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You'd be working within minutes of the big cities and yet be out there in some very beautiful countryside. When we find the right job for you we always make sure it's in the right place. Ring us now for details.

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Are you the most experienced person you know in IBM OS, PL1, COBOL and DLI? If you are then we've got a real peach of a job for you. We want your senior expertise to benefit a company which needs someone to handle a small compact Database team. This company's going to look after you well, with everything from sports to social facilities. Ring us now for full details.

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c£260 pw North West Senior FORTRAN. Contract 3 months
c£250 pw Midlands ICL 2900 VMEB. Contract 3 months
c£250 pw Yorkshire ICL 2900 VMEB IDMS COBOL. Contract 6 months
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**To £9K** — **SYSTEMS ANALYST** — Berks
Excellent opportunity to develop business analysis and project management skills. Ability to communicate with management at all levels more important than specific technical ability.

**To £6½K** — **PROGRAMMER** — London
Minimum of one year's COBOL required, any machine background. Excellent company benefits.

**To £8400** — **SNR. ANALYST/PROGRAMMER** — Surrey
Good knowledge of COBOL and some assembler programming experience, plus ability to lead a small team of people whilst handling work of a very confidential nature.

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Software House require COBOL or RPG II programmers to work in-house or on clients' premises in Home Counties. Own transport necessary, expenses paid.

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Box number replies should be addressed to:

**Box No. .....**

**c/o Computer Weekly**
**Dorset House**
**Stamford Street**
**London SE1 9LU**

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**DATA CONTROL SUPERVISOR**

We have a vacancy in our Computer Department for an experienced Data Control Supervisor.

This person will liaise with each department to ensure an even flow of work, and will be responsible for collating the documents to input to the computer and control of output through the Company's various control books. This entails both the sales and purchase ledger, maintenance of customer files, stock control and supervision of data preparation clerk.

This is a responsible position and requires someone who is conscientious, accurate, and has a general accountancy background, as the Company's financial information is also processed through this department.

Salary £5,000-£5,500 depending on age and experience.

Please apply in writing to: Mrs. M. Duckham, Teltscher Brothers Limited, 50-58 Tooley Street, London SE1 2QT.

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If you are interested in broadening your management skills, then telephone or write to: Adrien Sullivan, Digital Equipment Company Ltd., 252-266 Kings Road, Reading, Berks. Tel: Reading 5B3555. Please quote ref. 712.

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**SENIOR COMPUTER TECHNICIAN (PROGRAMMING)**

Applications are invited for the above post in the Alt-yr-yn Site. The successful candidate will be required to help in the design, implementation and maintenance of main-frame and micro-computer systems. Program-writing experience is needed in BASIC, COBOL and, preferably, other high-level languages.

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Application forms and job specification may be obtained from the Principal Administrative Officer, Gwent College of Higher Education, College Crescent, Caerleon, Newport, Gwent NP6 1XJ.

UNIVERSITY OF SALFORD

DEPARTMENT OF AERONAUTICAL AND MECHANICAL ENGINEERING

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Application forms and further particulars are available from the Registrar, University of Salford, Salford M5 4WT, to whom completed applications should be returned by 15 February, 1980, quoting reference MAE/81/CW.

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Application and requests for information on the above post should be made to:
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## Systems Manager

**Bibliographic Database Systems**

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Savoy Place, London WC2R 0BL
Telephone: 01-240 1871

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## PROGRAMMER/ANALYST
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**Further particulars from the Secretary, and Registrar, University of Warwick, Coventry CV4 7AL quoting Ref. No. 25/8/80; to whom application (no forms) giving full details of age, experience and qualifications and the names and addresses of two referees should be sent as soon as possible.**

**UNIVERSITY OF WARWICK**

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Based at Middleton, you will be responsible to the Assistant Divisional Finance Officer (Technical) for the supervision of the day-to-day operations of the Data Processing Section of the Division.

You will liaise with Head Office Computer Services staff on implementation, operation and development of financial and non-financial systems. You should have appropriate educational qualifications and have either a programming, systems or computer operations background.

Application forms from: Personnel Officer, North West Water, Pennine Division, London House, Oldham Road, Middleton, Manchester, M24 1BD.

*Closing date for applications: 15th February 1980.*
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North West Water

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**or ring him on 01-839 6765 for further information.**

Metropolitan Borough of Wigan
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DEPARTMENT OF MATHEMATICS AND COMPUTING

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For the Computing post applicants should be prepared to lecture also to the BEC/TEC Higher Certificate course in Computer Studies and should preferably have industrial or commercial experience in computing.

Further particulars and application forms from the Chief Administrative Officer, Wigan College of Technology, Parsons Walk, Wigan, WN1 1RR, to be returned within 14 days of the advertisement.

# DR

## Analysts

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| (DR/469) 2 + years financial systems - IBM site | to £7000 |
| (DR/470) 2 + years commercial systems | c £6500 |
| (DR/471) 18 + months (plus programming background) | to £6500 |

**SOUTH YORKSHIRE**

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| (DR/472) 3 + years commercial systems | c £6000 |
| (DR/473) 2 + years (with programming background) | to £6000 |
| (DR/474) 2 + years commercial systems | £ Neg. |

**TYNE & WEAR**

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| (DR/477) 3 + years manufacturing systems | c £7500 |

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| (DR/479) 18 + months IBM environment | to £6700 |
| (DR/480) 18 + months any machine background | to £7000 |
| (DR/481) 18 + months financial environment | c £7000 |
| (DR/482) 18 + months general d.p. background | c £7000 |
| (DR/483) 18 + months any mainframe | to £7500 |

**MANCHESTER**

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| (DR/484) 12 + months IBM background | c £6000 |
| (DR/485) 12 + months ICL site | c £6500 |
| (DR/486) 18 + months any environment | to £7000 |
| (DR/487) 18 + months ICL site | to £7000 |

## Programmers

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| (DR/489) 12 + months IBM COBOL | £ Neg |
| (DR/490) 2 + years COBOL on any mainframe | c £6500 |
| (DR/491) All levels PDP BASIC | to £6000 |
| (DR/492) 18 + months ICL COBOL - 2900 site | to £6500 |
| (DR/493) 12 + months COBOL on any hardware | to £5500 |
| (DR/494) 2 + years NCR COBOL | £ Neg. |

**SOUTH YORKSHIRE**

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| (DR/496) 3 + years COBOL on any mainframe | to £6250 |
| (DR/497) 3 + years ICL COBOL | to £7000 |

**TYNE & WEAR**

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| (DR/499) 12 + months IBM COBOL | £ Neg. |
| (DR/500) 3 + years PL/1 | c £6500 |
| (DR/501) 2 + years IBM COBOL | to £6500 |

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| (DR/503) 12 + months any mainframe | to £6000 |
| (DR/504) 18 + months IBM COBOL and/or PL/1 | to £6000 |
| (DR/505) 18 + months IBM background | to £6000 |
| (DR/506) 18 + months ICL environment | to £6500 |
| (DR/507) All levels ICL COBOL | to £7000 |

**MANCHESTER**

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| (DR/509) 12 + months Burroughs environment | to £6500 |
| (DR/510) All levels IBM COBOL and/or ASSEMBLER | to £7000 |
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**MANAGEMENT & EXECUTIVE SELECTION**

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Mrs Jane Williams, Personnel Group, Rutherford & Appleton Laboratories, Chilton, Didcot, OXON OX11 0QX, quoting Ref. VN 882 or 'phone 0235-21900 Ext. 510.
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## With large systems experience

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Mrs. L. Lisnay, Assistant Personnel Officer, ACT Services Ltd., Richmond House, Terminus Terrace, Southampton.
Tel: (0703) 34433 ext. 3305.

ACTS

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**SENIOR SYSTEMS ANALYST**
**SYSTEMS ANALYST**
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**£6,000**
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**£ Neg.**
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**SYSTEMS ANALYSTS c £6,500**
This major company is looking for two systems analysts with around 3 years IBM experience. The ideal applicants will have a minimum 1 year's programming in COBOL, ASSEMBLER or PL/1. On-line and Data-base a distinct advantage. Excellent prospects.

**LIVERPOOL**
**PROGRAMMERS c £5,500**
Our client, an IBM installation, has a need for two programmers to work on on-line and data-base systems under OOS/VS. 2 years COBOL, ASSEMBLER and/or PL/1 essential.

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**PROGRAMMERS £5,500 Neg.**
Our client is willing to negotiate a very attractive salary for top-notch COBOL programmers. 2 years general commercial applications experience a must. Knowledge of on-line and data-base systems especially under IDS and TOS would be extremely beneficial.

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At the present time, we have so many top jobs registered with us, that we couldn't do them (or you) justice by listing each one in our usual style. So we invite you to come along to any of the hotels detailed below, for an informal chat and a chance to choose the position that's best suited to you. All we ask is that you have a minimum one year's experience in any of the analysis or programming disciplines, gained in a general commercial, technical, real-time minis or process control environment. Interviews will be held on the days mentioned, between 4 and 8.30 p.m. SEE YOU THERE!

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| TUES. 5th FEB. | LIVERPOOL St George's Hotel Lime Street (051) 709 7000 | THUR 7th FEB. | PRESTON Preston Bu... Hotel ... (0772) ... |

If you can't make it to any of these interviews, contact STEVE SYKES on Leeds (0532) 444185 (daytime) or Leeds 662417 (evenings and weekends) or write with brief details (no stamp required) to Lorien Computer Services Limited, FREEPOST, Leeds LS7 3YY.

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# university college of swansea

## Microprocessors at Swansea

The University College is seeking experienced personnel to staff the recently established Microprocessor Centre, which is responsible for providing a service to users in the College and in industry.

Applicants should have an appropriate degree or equivalent professional qualifications, and should be able to demonstrate experience with microprocessors in any relevant field.

The three vacancies are as follows:

**Microprocessor Centre Manager**
(Salary £7,960-£9,881 increasing to £8,472-£10,484 on 1 April, 1980). To be responsible for the day-to-day operation of the Centre and for liaison with users.

**Microprocessor Systems Engineer**
(Salary £4,768-£6,273 increasing to £5,052-£6,786 on 1 April, 1980). To work on system design and application, with a software bias.

**Research Demonstrator**
(Salary up to £5,401 per annum increasing to £5,725 per annum on 1 April, 1980 for applicants aged 26). To work in the Department of Electrical and Electronic Engineering in collaboration with the Centre to ... microprocessor courses. The appointment is for one year in the first instance, (renewable annually for up to a further two years).

Application forms (2 copies) and further particulars may be obtained from the Personnel Officer, University College of Swansea, Singleton Park, Swansea SA2 8PP, to whom they should be returned by Friday 22 February, 1980.

# SYSTEMS ANALYST

**THE COMPANY**
Anglo Swedish Equipment, one of the major distributors of forestry and construction equipment in the U.K.

**THE PRODUCT**
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**THE JOB**
To design and implement interactive systems for our POP 11/70 Accounting ledgers, payroll and word processing are already in operation. During 1980 most of our efforts will be directed towards order processing and stock control.

**THE PERSON**
Must have at least 3 years' experience of successful systems analysis/design and implementation, as well as being both articulate and capable of playing a constructive role in the D.P. Department.

***Please TELEPHONE MR. M. BRAVES FOR FURTHER DETAILS AND AN APPLICATION FORM OR WRITE TO:***

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THE COMPANY: Nexos is a recently formed venture with significant financial backing operating in the field of integrated office systems.

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THE REWARDS: In addition to salary, all the major benefits normally associated with a progressive major company will apply, including a company car which is also available for private use.

HARRY PALMER would like you to contact him for further information and to arrange an interview quoting reference CW/31D1.

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If you don't fit one of them, still get in touch. What we don't have now, we will have later.

### IBM OS SENIOR OPERATORS — £6500

This is an excellent opportunity for an Operator with approx. three years' OS VS1 exp. to join a leading financial organisation based in C. London. As standards at this installation are extremely high prospective applicants are expected to be technically competent and fully conversant with both JCL and Utilities. Prospects for career developments are excellent, and fringe benefits include sub MORTGAGE, annual BONUS, LVs and mileage allowence.

### IBM OS OPERATORS — £5600

12 months' OS experience is a requirement for this City based company installing a newly-installed 168M under OS VS1. Ambitious Operators will benefit from the outstanding prospects into Shift Management or Technical Support. Benefits inc. sub MORTGAGE, Restaurant and LVs.

### IBM DOS OPERATORS REQUIRED FOR NEW RANGE HARDWARE — £5500

We have a number of clients in and around the London area who are seeking Operators with approx. 12 months' DOS exp. Positions are currently available on mid-range IBM 370 hardware but most of our present requirements are for companies installing New Range equipment (4331, 4341, 3031) this year. Shifts and benefits vary.

### IBM DOS OPERATIONS SUPERVISOR — to £8000

Our client based in C. London, requires an Operations Supervisor (aged 25+) with proven experience in a Supervisory/Management capacity, to assume full responsibility for the Operations Department.
Intelligence, good technical skills and the ability to communicate effectively at all levels, are pre-requisites for this position. An IBM 4341 will be installed later this year, replacing the current mid-range IBM 370 under DOS VS POWER.
Excellent benefits include Annual BONUS, LVs & N/C Pension.

### IBM PRODUCTION CONTROLLER (DAYS) — £6000+

If you are conversant with OS JCL and Utilities, and wish to develop your skills in a technical environment, this is the ideal opportunity. Your main responsibilities will be to prepare and maintain JCL, set-up and monitor production runs, system testing, restores/security "back-up" and general troubleshooting. Applicants should be mature, at least Shift Leader status and possess a minimum of three years' experience within Operations. This C. London-based company utilising New Range hardware offers excellent prospects for career development. Benefits inc. MORTGAGE subsidy and lvs.

### SOFTWARE SUPPORT TRAINEES — (Comprehensive training) c £4800

Applications are invited from ambitious, self-motivated people to join a team involved in providing support for a wide range of computer applications.
Some data processing knowledge would be useful, as would experience in a "problem solving" environment. However the prime requirements are the ability to communicate well at all levels and a good academic background, preferably a degree or equivalent. Ref. PS1.

### BURROUGHS OPERATOR — To £5700

A City based financial concern has a requirement for an Operator with 18 months+ experience on Burroughs 1700 equipment.
The successful candidate will operate the existing hardware until the "change-over" to new equipment has been completed. He/she will then be retrained on New Range 16M hardware: a 2-shift system will be in operation.
There are excellent company benefits including SUBSIDISED MORTGAGE, 75p LVs p.d. and 4 weeks holiday. Ref. PS2.

### PDP OPERATOR — DAYS — c £4800

A minimum of 18 months' Operating experience, preferably gained with PDP-11 equipment, is required by this North London company.
The chosen applicant, who should be mature and intelligent, will operate a PDP-11/70 on a DAYS ONLY basis. Ref. PS3.

### IBM SYSTEM ENGINEERS — to £9000

Our client is one of the world's largest independent suppliers of system software, they require 4 IBM DOS system programmers (2 jnr.-2 senior) to join their new support team. As a key person, based at their London offices, you will have a good knowledge of DOS ASSEMBLER and after training the ability to support their range of software products. For more detailed information please telephone Robert Lovelady — Now.

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| IMS DB/DC Analyst/Programmers | City |

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## SHIFT LEADER

We need an experienced Computer Operator to lead a three-person alternating shift operating the Laboratory's ICL 2960.

Salary scale £3,867-£4,612 + £4.13 for each evening shift worked.

Application forms and further particulars may be obtained from H. R. Clayton, Senior Assistant Registrar, The Registry, The University, Canterbury, Kent, CT2 7NZ (Tel: Cant. 66822, Ext. 363), quoting reference M80/2, to whom completed applications should be returned not later than 16 February 1980.

## BOX Nos.

Box number replies should be addressed to:

Box No. ....
c/o Computer Weekly
Dorset House
Stamford Street
London SE1 9LU

# Senior Computer Operators

**Up to £6,099** — **Westminster**

To be involved in the operation of a Data General C330 minicomputer in Westminster.

North Thames Gas is developing a Customer Service computer system to achieve improvement in the standard of service to our customers and it will shortly be operational in our Westminster office. It will be a real time system on a Data General C330 minicomputer servicing over 60 VDU's.

We are now looking for two Senior Computer Operators who will be responsible for the efficient operation of the system. You should ideally have a minimum of two years computer operations experience, including use of large exchangeable discs, magnetic tapes and communications equipment.

We will pay you well, the starting salary will be in the range £5233-£6099.

The successful applicant will be required to work a 2 shift system for which a payment of 13½% of basic salary is made.

Our range of benefits is what you would expect of a large, successful organisation and includes an active Sports and Social Club.

If you feel that you could make your mark in this challenging environment, then please telephone 01-993 0914 ext. 34 and talk to Geoff Fenton, or write to the Senior Personnel Officer (H.Q.), North Thames Gas, North Thames House, 17-51 London Road, Staines, Middlesex TW18 4AE, *quoting reference Q9048.*

NORTH THAMES GAS



### D.P. MANAGER (DESIGNATE) — To £6000 + Car

NORFOLK
This position will suit an experienced Analyst/Programmer with 4 years' experience in COBOL gained at a 2903/4 site. The successful candidate will be promoted to the position of DPM after a qualifying period. Full relocation costs will be paid. Ref. M3741

### D.P. MANAGER — £7000 +

SOUTHERN IRELAND
Our client, a part American owned transport company, are seeking someone to be fully responsible for the EDP Department. At least two years' analyst/act experience together with a programming background using RPG II on COBOL. Full relocation costs paid. Ref. 83748

### OPERATIONS SUPERVISOR — c. £8000

MIDDLESEX
A leading manufacturer are seeking someone with a minimum of 4 years' operations experience in DOS/VS POWER/VS, with JCL knowledge. The ability to delegate and supervise is also essential. Ref. 83634

### CHIEF OP (DESIGNATE) — To £5750

MIDDLESEX
Initially to act in the role as shift leader (days only at present). Our clients are installing their first computer, an IBM 4331 in late February/early March. Applicants should have a strong DOS background. Ref. 83670

### SENIOR OPERATOR — c. £6000

HAMPSHIRE
Minimum of 2 years' OS II+ and VME6 experience is required for this go-ahead company. The position offers rapid promotion opportunities for the right person. The company offer excellent benefits and a full relocation package. Ref. M3458

### SENIOR OPERATOR — c. £6000

SURREY
Applicants should be at senior operator or shift leader level and have gained their experience working with large mainframes. Ref. M3747

### SENIOR OPERATOR — c £6000

WEST LONDON
Motor Dealer with communications experience is required for this POP site. This is a challenging position where total involvement is a must. Ref. M3711

### SHIFT LEADER — To £5574

WEST LONDON
This position would ideally suit a senior operator who is seeking career advancement. The successful applicant will have at least two years' DOS/VS POWER VS experience. The site operates on a 2 shift system. Ref. 83633

### SYSTEMS ANALYST — c £7000

LEICESTERSHIRE
Ambitious person with 3-5 years' System Design experience to work on a wide range of commercial applications. The successful applicant can look forward to a rewarding future with this company. Ref. M3688

### CUSTOMER SERVICES MANAGER — c £6000 + car

SURREY
This is an excellent opportunity for an experienced shift leader/chief operator who is used to dealing with user departments, scheduling and controlling new systems. The work is in a bureau environment and offers full involvement and excellent prospects. Ref. M3707

### SYSTEMS ANALYST — £9000

SOUTH BUCKS.
The ideal applicant should have sound business analysis experience together with good communication skills. The ability to liaise at management level is essential. Generous fringe benefits are offered. Ref. 83749

### FORTRAN/ALGOL PROG (2) — £6000-£8000

SOUTH COAST
Our clients are seeking programming staff with a minimum of 1 year of Fortran and/or Algol experience to be involved in their design of integrated circuits. Attractive large company benefits apply together with re-location costs where necessary. Ref. 83708

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A HONEYWELL OS 2000 operator is required soon for a site in the North of England for 3 months, 2 shifts. Ref. CM566.

ICL Gll operators are required for a site in the North for 3 months. To start soon. Ref. CM565.

An ICL Gll operator is required for this DAYS ONLY contract in North-West England. Immediate start, 4-6 months. Ref. CM555

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We need all types of PUNCH, VDU and DDE operators for various London and Home Counties jobs. Ref. CM/JW

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WARWICKSHIRE COUNTY COUNCIL
MIDLAND ROAD CONSTRUCTION UNIT
HEADQUARTERS

## Team Leader Programmer

Grade P.O.1 (8-10) (£7,125-£7,906)

Applicants are invited for the above vacancy at the Headquarter's of the Midland Road Construction Unit in Leamington Spa. The Unit is responsible for Motorway and Trunk Road projects for eight Midland counties and the successful applicant will head a support section, working on a variety of applications in the field of Highway Engineering.
Systems Analysis would form a vital part of the work and applicants should have a degree in a numerate discipline and had several years' experience in a scientific/technical computer environment, including good experience of I.B.M. 370/3031 machines.
The appointment will be on the staff of the Warwickshire County Council and subject to the National Scheme of Conditions of Service, the Local Government Superannuation Acts and the production of a satisfactory Medical Questionnaire.
Settling-in allowance up to a maximum of £800 is payable in appropriate cases.
Equal opportunities policy — applicants are considered regardless of marital status, race or sex and the Council welcome applications from registered disabled persons with the necessary abilities.

**Application forms can be obtained from the Director, Midland Road Construction Unit, Brandon House, 62-64 Holly Walk, Leamington Spa, to whom they should be returned by not later than Friday, 15th February, 1980.**
**O. G. Fuller, County Secretary, Shire Hall, Warwick.**

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For more information contact Jack Collings at his office from 9 a.m.-5 p.m. on 0273-833848, or if you prefer, speak to him any evening (including weekends) at home after 7 p.m. on 0273-40088D. Failing that, just simply send in your career resume and we will get back to you.

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SOUTHERN DIVISION

## COMPUTER TERMINAL OPERATOR

G3 (£4266-£4722)

Applications are invited for the above post based at Castle Market Building.

The successful applicant will assist the Computer Operations Supervisor in the running of the Computer Operations Unit including allocating and checking work and deputising in the absence of the Supervisor. The duties of the post will also include responsibility for the operation of the ICL 7503 computer terminal which is connected to the Authority's ICL 2970 computer located in Bradford, and assistance with data preparation work as required.

During the next few months it is planned to replace the existing computer terminal and card punch and verifier machines with Mohawk Data Sciences Series 21 key to diskette and terminal equipment and experience of this or similar equipment would be advantageous.

Candidates should have proven experience in operating a computer terminal and data preparation equipment.

**Applications quoting Ref. No. 66/80 and stating age, qualifications and experience should be sent to the Division Director, Yorkshire Water Authority, Southern Division, Castle Market Building, Exchange Street, Sheffield S1 1GG to arrive not later than 6th February, 1980.**

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## SYSTEMS ANALYST/ COMPUTER PROGRAMMER

TRANSPORTATION PLANNING
POST NO. 3002088
SALARY GRADE SO.1/SO.2 (£6,721-£8,827)

Applications are invited from suitably qualified and experienced persons for the above post in the County Transportation Unit.

The County operates an I.B.M. 370/148 system using V.M./C.M.S. and there is a remote V.D.U. situated in the County Planning Department for Transportation planning use.

The successful applicant (m/f) will be expected to control the use of, and to maintain and further develop computer programs for transportation planning. Preference will, therefore, be given to applicants who have a knowledge of transportation planning systems. An ability to program in Fortran is essential.

Applications, giving full particulars of age, experience, qualifications and present appointment, including existing salary together with the names and addresses of two referees should reach the County Planning Officer, Martin Street, Stafford ST16 2LE, by 18th February, 1980.

Relationship to any member or Senior Officer of the County Council must be disclosed.

Staffordshire County Council

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Telephone Peter Humphreys on Bristol (0272) 213151 or write to Harrison Cowley Executive Selection, 35 Queens Square, Bristol BS1 4NQ.

HCES

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You will have with Head Office Computer Services staff an implementation, operation and development of financial and non financial systems. You should have appropriate educational qualifications and have either a programming, systems or computer operations background.

Application forms from: Personnel Officer, North West Water, Pennine Division, London House, Oldham Road, Middleton, Manchester, M24 1BD.

*Closing date for applications: 15th February 1980*
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Running under DOS/VS with POWER/VS.
Applicants (male or female) should have:

1. Substantial experience in the supervision of operations and data preparation staff.
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**Telephone: The Computer Manager, Paul Offen, on 01-592 4500 Ext. 343 for further details and application form.**

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## HOW TO GET UP THE LADDER IN ONE STEP

This is a unique opportunity to get in on the ground floor of an exciting new operation. Our client is a leading American software products company. They are now expanding, by opening a wholly-owned subsidiery in the UK.

**Sales Support £8-12,000**

The technical support you give to our sales team is vital. These key sales will involve a good understanding of software on IBM and plug-compatible computers.
The total range of products will cover systems software packages (including TP monitors and database) and financial modelling systems.
Your involvement will range from technical presentations right through to installation, training staff onto the new system, and providing an in-depth after-sales support.
The company is located in North Herts. Although you should be willing to undergo initial training in the States or Europe.
In both vacancies, an executive car will be provided — and you can expect all the benefits of working with a major company — including help with re-locating expenses.
There's never been a better chance to make the most of your talents. If you're looking for a brighter future, call us to arrange a meeting on Welwyn (043-871) 7007.

**Software Product Sales £15,000**

At around 25-30, you'll have already established yourself within the industry, with a background of software products or services.
Your sales expertise should be supported by the technical knowledge to develop new markets — because the company is introducing a range of products to the UK, which have already proved highly successful throughout the rest of the world.
To enable you to gain a good weight into these products your income will be guaranteed during the initial period.

**Softspot, PKB Advertising Ltd., 1 Mardley Hill, Welwyn, Herts. Tel: Welwyn 7007**

## DATA PROCESSING MANAGER

WEST COUNTRY — £ salary negotiable

A leading clothing manufacturer, committed to an expansion programme, currently using SYSTEM 34 with remote terminals, requires a Data Processing Manager.

The successful applicant should have a solid background of systems analysis, at least 3 years RPG II programming, a good working knowledge of IBM GSD equipment and sound managerial experience.

Reporting to the Financial Director, the D.P. Manager will play an important role in the development of the company's systems. Computer applications will include Sales Invoicing, Stock Control, Cost and Financial Accounting, Payroll and Production Control.

A generous salary will be offered commensurate with the importance of this position and the previous experience of the applicant, together with the other benefits of working for a progressive public company.

Applications in writing with C.V. should be made to:
L. J. Baldwin FCA.,
Clarke Carlton Limited,
Wells, Somerset BA5 1SD.

THE UNIVERSITY OF SUSSEX

## MICROPROCESSOR SPECIALISTS (TWO POSTS)

The University is seeking to establish a University microprocessor laboratory and applications group. This laboratory will be effectively applied to its research and research related and applications are invited for two new posts in computer based applications. Both posts are available immediately, and it is hoped to arrive an appointment as soon as possible. One post is to be currently housing Sussex. The other is in the Department of Applied Physics. Duties will include the design of current developments and providing advisory services, together with specific support to the design and development of students and colleagues.

Applications (6/7) should have proven experience and expertise in microprocessor software/hardware development and their application. Experience of projects in the realisation of digital electronic control or as consultancy and a degree in electronics or computer science or equivalent would be preferred. Starting salary for these posts will be according to age and experience of the successful candidate within the following ranges (i.e. which may be up to £5,445 p.a. under review) £4,545 p.a. (under review) £5,445 p.a. (under review) £6,345 p.a. (under review) £7,245 p.a. (under review) £8,145 p.a. (under review) £9,045 p.a. (under review) £9,945 p.a. (under review) £10,845 p.a. (under review) £11,745 p.a. (under review) £12,645 p.a. (under review) £13,545 p.a. (under review) £14,445 p.a. (under review) £15,345 p.a. (under review) £16,245 p.a. (under review) £17,145 p.a. (under review) £18,045 p.a. (under review) £18,945 p.a. (under review) £19,845 p.a. (under review) £20,745 p.a. 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# SHIFT SUPERVISOR

**ICL 2960 LUTON c. £5800**

Laporte Industries require a Shift Supervisor to lead shift team who will operate their ICL 2960 running under DME.

This is a responsible position reporting to the Operations Manager. In addition to team leadership the Supervisor will be able to control and schedule the computer.

Candidates should possess four years' ICL G2/G3 experience, two of which have been in a supervisory role. A knowledge of data control procedures would be an advantage.

Conditions of employment include four weeks' annual holiday, non-contributory pension fund and generous assistence with exponses if rolocation is necessary.

Applications, in writing, to Group Personnel Manager, Laporte Industries Limited, PO Box 8, Kingsway, Luton, Beds., or telephone John Cox, Luton 21212 ext. 2167 for further details.

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**PO Box 8, Kingsway, Luton, Beds. LU4 8EW**

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UNIVERSITY OF BIRMINGHAM

## ADMINISTRATIVE COMPUTER UNIT

The University is looking for two people with good COBOL experience to join the Administrative Computer Unit to help with a growing work load including development of on-line facilities in a range of interesting applications in financial and academic administration. We offer a good holiday entitlement, contributory pension scheme, access to the University's social and sports facilities and a starting salary, fixed according to qualifications and experience in the range £4763 to £8987 p.a. (from 1 April £890—£4492 to £7479). If you are interested telephone Mr. A. J. Pratt (Assistant Secretary, Data Processing) for further information on 021-472 1361 ext. 3192 during the day or on 021-475 1021 after 6 p.m., or write to him at the University of Birmingham, P.O. Box 363, Birmingham B15 2TT.

Further particulars and application forms, which should be returned to him by 22 February, 1980, are obtainable from the Senior Assistant Secretary at the same address.

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# ASSISTANT SHIFT LEADER/ TP NETWORK ADMINISTRATOR

**£6,507 - £8,364 p.a.**

As a result of major expansion, London Electricity wishes to appoint an Assistant Shift Leader/TP Network Administrator to work on a 2 shift system covering Monday to Friday. The appointment is based in the Computer Services Department in SE1, close to London Bridge and Waterloo Underground Station.

The equipment used in this department consists of a dual IBM 370/158 installation which supports a large teleprocessing network composed of 270 terminals utilising OS/VS1 and CICS. Ideally, applicants for this position will possess at least three years' experience in a similar environment, supporting batch and on-line systems under OS/VS1 and must be capable of liaising with users of the installation. Previous experience in staff supervision is also desirable.

The salary offered rises within a range to a maximum of £8,364 p.a.; working conditions are excellent in these comfortable offices utilising the most modern equipment, and benefits include good holidays, staff canteen, sick pay and pension schemes, privilege purchases, etc.

Please send a written application, incorporating details of age, qualifications and experience to:

**Computer and Management Services Controller**
**LONDON ELECTRICITY BOARD**
**P.O. Box 74, London SE1 6NL.**
(This appointment is open to male and female applicants)

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ROYAL COLLEGE OF ART

Department of Design Research

## Postgraduate Studies Computers in Art and Design

Applications are invited from graduates wishing to take Master's or PhD degrees by project. Topics which might be studied include:

1 Computer graphics and visualisation
2 Modelling design processes.
3 Aids to design decision making
4 Computer in the visual arts.

Intending applicants should have a good first degree in computing or a related subject and be keen to work in an interdisciplinary environment.

For further details and application form, write to:

The Registrar, Royal College of Art, Kensington Gore, London SW7 2EU

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CHELSEA COLLEGE
University of London

## OPERATIONS MANAGER

An Operations Manager is required to take charge of the group of six computer operators and two data preparation staff. The post calls for an experienced and mature systems manager, preferably with a strong engineering/technical background which will hopefully include some systems programming experience.

A Harris interactive computer system is being upgraded as the College Elliott 4130 mainframe computer is phased out later this year. The Harris VULCAN operating system supports a network of terminals on real-time/time-shared/batch priorities in a variety of languages and utilities.

A PDP11/40 computer provides an RJE link to the University Computer Centre, and a Nova 1220 computer is dedicated to CAL applications. The communications network is controlled by a Gandalf PACX3 system.

Salary Scale £6609-£9013 per annum, inclusive of £749 London Allowance. Commencing salary will depend on age, qualifications and experience.

Further details and application forms from the Personnel Officer, Chelsea College, Chelsea Manor Street, London SW3 5TW. Informal contact can be made with the Manager of the Computing Centre on 01-736 1244.

Closing date 22nd February, 1980.

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Financial Services Department

## Programmer/ Analyst

**£3379-£5706**

Following internal promotion we have a vacancy for PROGRAMMER/ANALYST based in our Computer Section at the Town Centre, Harlow. The Council operates a 48K ICL 2904 with EOS 60 and magnetic tape together with a communications systems comprising of some twenty terminals based upon ICL 7502 and Philips PTS 6000 equipment with plans for further enhancement.

Applicants should possess a minimum of two years' overall computer experience preferably on ICL machines using COBOL.

A flexitime scheme is in operation. Housing may be available. Full removal expenses paid, travelling expenses lodging allowance, legal and relocation expenses available in appropriate cases. Sports and Social Club.

**Application forms and job description are available from the General Manager's Department, Harlow Council, 17 Adams House, The High, Harlow, Essex, CM20 1ED. Telephone Harlow 2602, Ext. 66.**

Closing date 18th February 1980.

**HARLOW**

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## BOX Nos.

Box number replies should be addressed to:

Box No. .....

c/o Computer Weekly
Dorset House, Stamford Street, London SE1 9LU

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# MVS Support

**Holland £20,000+ p.a.**

We are seeking two Systems Programmers to join two of our Software Consultants based in the Netherlands. The first is working on major system upgrades and maintenance for an expanding MVS Data Centre equipped with an IBM AM9HAL/V7 and a 5M 370/168. The second is responsible for the implementation and maintenance of MVS for a 3M 3031 and VM/VSI for a 4341. Although a knowledge of MVS is desirable, Systems Programmers with experience of TSO, VTAM or VSAM are also invited to apply. Employment is on a six-monthly renewable contract basis with an anticipated project duration of between one and two years.

*For further details, please telephone or write to Brian Bidston at CDS or call during evenings/weekends on 03446 6385*

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# WEST OF SCOTLAND

## SYSTEMS DEVELOPMENT

One of the UK's most well known and successful companies located in the West of Scotland is embarking on a far reaching systems development project.
Developments will involve the data processing department designing and implementing advanced systems in most areas of the company including production control, stock control, finance, costing and general administration.
The equipment is IBM and full use will be made of the latest software aids including DL/1 and COPICS.
Excellent salaries will be offered to the successful candidates. Full relocation expenses reimbursed in appropriate cases.

**SENIOR SYSTEMS ANALYSTS**

Candidates for these positions must have several years systems design and implementation experience. Application areas preferred are finance or production control. A programming background would also be useful. *(CW/8009)*

**to £7500**

**ANALYSTS**

These vacancies would appeal to young analysts with at least 12 months systems experience preceded by a programming background. *(CW 8010)*

**to £6500**

**ANALYST/PROGRAMMERS**

These positions will offer a real opportunity for the successful candidates to develop their programming and design skills more fully into the area of analysis *(CW/8011)*

**to £6500**

**PROGRAMMERS**

Candidates must have from 18 months COBOL experience. Any mainframe considered as appropriate retraining will be given. Salary dependant on experience of specific candidates. *(CW/8012)*

**to £6000**

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# Born to lead in Computer Software and Communications in the Eighties

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B Per Haviland 01-828 6634
C Gerald Plimbley 061-941 1822

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